

WL-TR-94-4054
Volume 3, Chapter 7



DAMAGE TOLERANT DESIGN HANDBOOK

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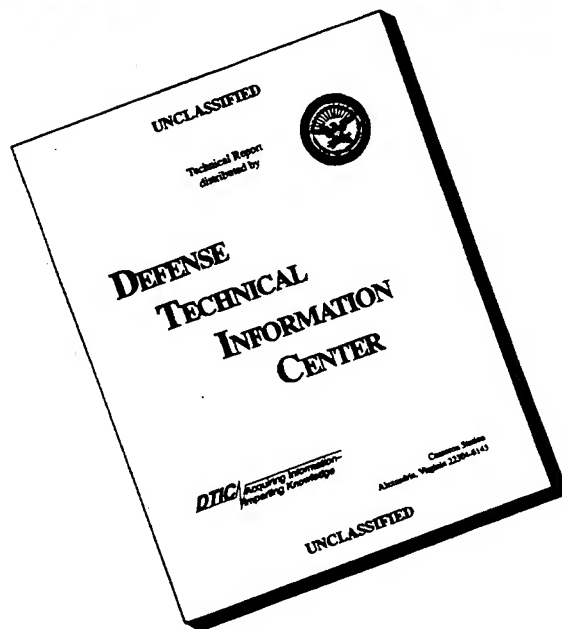
**May 1994
Final Report for Period June 1991 - May 1994**

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**Materials Directorate
Wright Laboratory
Air Force Materiel Command
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1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE MAY 1994	3. REPORT TYPE AND DATES COVERED FINAL 06/19/91--05/19/94		
4. TITLE AND SUBTITLE DAMAGE TOLERANT DESIGN HANDBOOK VOL 3, CHAPTER 7		5. FUNDING NUMBERS C F33615-91-C-5610 PE 62102 PR 2418 TA 04 WU 91		
6. AUTHOR(S) D.A. SKINN, J.P. GALLAGHER, A.P. BERENS, P.D. HUBER, J. SMITH				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) UNIVERSITY OF DAYTON RESEARCH INSTITUTE 300 COLLEGE PARK DAYTON OH 45469-0120		8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) MATERIALS DIRECTORATE WRIGHT LABORATORY AIR FORCE MATERIEL COMMAND WRIGHT PATTERSON AFB OH 45433-7734		10. SPONSORING/MONITORING AGENCY REPORT NUMBER WL-TR-94-4054		
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.		12b. DISTRIBUTION CODE		
13. ABSTRACT (Maximum 200 words) This report presents a compilation of mechanical property data that are useful for damage tolerant design and analyses. The data of this handbook combines the old data that were previously presented in MCIC-HB-OIR (Damage Tolerant Design Handbook, December 1983) and more recent data that were collected from various sources. The fracture toughness, crack growth, R-curve, sustained load and threshold data are for alloy and stainless steels, nickel based super alloys, titanium alloys and aluminum alloys.				
14. SUBJECT TERMS MECHANICAL PROPERTIES FRACTURE TOUGHNESS SUBCRITICAL CRACK GROWTH		R-CURVES SUSTAINED LOAD THRESHOLD		15. NUMBER OF PAGES 733
16. PRICE CODE				
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UL	

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Foreword

This report summarizes the results of a damage tolerant, material property data collection and reporting program conducted under USAF Contract F33615-91-C-5610. The work was sponsored by the Materials Directorate of Wright Laboratory with Mr. Jack Coate of the Systems Support Division serving as the project monitor. The technical effort was conducted between June 1991 and January 1994. The work was performed by the University of Dayton Research Institute under the general supervision of Dr. Joseph P. Gallagher with Dr. Alan P. Berens serving as Principal Investigator.

This final report comprises eight chapters which are presented in five volumes as follows:

<u>VOLUME</u>	<u>CHAPTER</u>	<u>DESCRIPTION</u>
1	1	Handbook organization and content
	2	Methods of calculation
	3	Alloy Steels
	4	Stainless Steels
2	5	Nickel Based Super Alloys
	6	Titanium Alloys
3	7	Aluminum 2000/6000 Series Alloys
4 & 5	8	Aluminum 7000/8000 Series Alloys

A detailed listing of the materials represented in the Handbook is contained in the preceding Table of Contents. In the body of the Handbook, the pages are numbered within chapters and the relevant portion of the table of contents is repeated at the beginning of each chapter.

CHAPTER 7

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TABLE 7.0.1

AVAILABLE DATA FOR ALUMINUM 2000/6000 SERIES ALLOYS

Alloy	Condition/ Heat Treatment	Product Form	K_{Ic}	K_c	R Curve	da/dN	da/dt	K_{Isec}
2014	T451	Plate					1	
		Sheet		111		40		
		Plate		4				
	T6	Forging	22			4		1
		Forged Bar	6					
		Rolled Bar				4		
		Forging	4					
	T611	Forging	6					
	T651	Plate	52	12			1	3
	T652	Forging	28					
2020	T6	Sheet		19		4		
		Plate	3					
		Extrusion	1					
		Sheet		12				
	T651	Plate	20	33		12		1
		Sheet		21				
2020 (ALCLAD)	T6	Sheet						
2021	T81	Plate	3					3
	T81 OVERHEATED WELD	Plate						1
	T81 REPAIR WELD + AGE WITH 2319 FILLER WIRE	Plate	6					
	T81 REPAIRED WELD AGED 16HR 325F HEAT AFFECTED ZONE	Plate						1

TABLE 7.0.1 (CONTINUED)

2 of 5

AVAILABLE DATA FOR ALUMINUM 2000/6000 SERIES ALLOYS

Alloy	Condition/ Heat Treatment	Product Form	K _{Ic}	K _c	R Curve	da/dN	da/dt	K _{Isc}
2021 (Cont'd)	T81 REPAIRED WELD AGED 16HR 325F WELD CENTER LINE	Plate						1
	T81 REPAIRED WELD AGED 16HR 325F WELD FUSION LINE	Plate						1
	T81 WELD + AGE WITH 2319 FILLER WIRE	Plate	9					
	T81 WELDED AGED 16HR 325F FUSION LINE	Plate						1
	T81 WELDED AGED 16HR 325F HEAT AFFECTED ZONE	Plate						1
	T81 WELDED AGED 16HR 325F WELD CENTER LINE	Plate						1
	T8151	Plate	3					
2024	T3	Unspecified				68		
		Sheet		142	6	57		
		Plate		15		3		
	T351	Sheet			7	9		
		Plate	18	19	25	64	5	4
		Extrusion	12					
		Forged Bar	8					
	T3511	Extrusion	8			18		
	T352	Forging						1
	T36	Sheet		4				
	T4	Sheet		48				
		Forging					1	
	T42	Plate				4		

TABLE 7.0.1 (CONTINUED)

AVAILABLE DATA FOR ALUMINUM 2000/6000 SERIES ALLOYS

Alloy	Condition/ Heat Treatment	Product Form	K _{Ic}	K _c	R Curve	da/dN	da/dt	K _{Isec}
2024 (Cont'd)	T6	Sheet		6				
	T62	Sheet				15		
	T62 (GQ)	Sheet		5				
		Plate			5			
	T62 (WQ)	Sheet		5				
		Plate			5			
	T81	Sheet		64		41		
		Plate			6			
	T851	Sheet		30				
		Plate	204	42		74		7
	T8510	Extrusion	9					
	T8511	Extrusion	6					
	T852	Forging	69			15		12
	T86	Sheet		30				
		Sheet				44		
2024 (ALCLAD)	T3	Plate				9		
		Sheet		295		6		
	T86	Sheet		4				
2048	T851	Plate	64			15		
	T3	Sheet			6	2		
2091	T351	Plate			3	2		
	T6	Forging				2		

TABLE 7.0.1 (CONTINUED)

AVAILABLE DATA FOR ALUMINUM 2000/6000 SERIES ALLOYS

Alloy	Condition/ Heat Treatment	Product Form	K _{IC}	K _C	R Curve	da/dN	da/dt	K _{Isc}
2091 (Cont'd)	T8 275F 12HRS	Sheet				8		
		Plate				8		
	T81 335F 32HRS	Sheet				2		
2124	T851 335F 16HRS	Plate				3		
		Plate	1					
	T851	Plate	1138	44	10	69		8
2214	T851 (417)	Plate	164					
		Plate	27					
	T851 (SP)	Plate	25					
2219	T851	Plate	45					
		Plate					1	3
	T37	Sheet		4				
2219	T851	Unspecified				9		
		Sheet		23				
	T851	Plate	151	24		72		11
2219	T8511	Forging	112					
		Extruded Bar				5		
	T852	Forging	142			16		
2219	T87	Billet				1		
		Sheet		75				
	T87-300F 100HRS	Plate	29	24				3

TABLE 7.0.1 (CONCLUDED)

AVAILABLE DATA FOR ALUMINUM 2000/6000 SERIES ALLOYS

Alloy	Condition/ Heat Treatment	Product Form	K _{Ic}	K _c	R Curve	da/dN	da/dt	K _{Isec}
2024	T39	Plate				3		
2419	T851	Plate	95			2		
2618	T81	Sheet		6				
	T851	Plate	15					
	T81	Sheet				2		
	T6	Sheet		22				5
6061	T651	Plate	13	4		1		3
		Forged Bar	3					
	T652	Forging	1					2
	T7	Casting				20		
A201	T6	Casting				16		
A357	T6; SOL. HEAT TREAT 1010F 24HRS; H2O Q AT 160F WITH 9 SEC QUENCH DELAY	Casting				8		
AL905XL	Unspecified	Forging				15		
IN905XL	Unspecified	Forging				19		
	850F 2HRS; 665F 2HRS; WARM H2O Q; 230F 24HRS	Forging				2		

TABLE 7.0.2

**PLANE STRAIN FRACTURE TOUGHNESS VALUES OF ALUMINUM 2000/6000 SERIES ALLOYS
AT ROOM TEMPERATURE**

Alloy	Condition/ Heat Treatment	Product Form	Range of Product Thickness (in.)	$K_{Ic} (Ksi\sqrt{in})$											
				Specimen Orientation											
				L-T			T-L			S-L					
				Min Spec Thk	n	Mean	Std Dev	Min Spec Thk	n	Mean	Std Dev	Min Spec Thk	n	Mean	Std Dev
2014	T6	Forging	0.89-8.00	0.71	2	27.9	0.8	0.25	4	17.4	1.7	0.75	5	16.9	1.9
		Forged Bar	4.50	---	---	---	---	0.25	2	16.7	0.6	---	---	---	---
	T611	Forging	1.00	---	---	---	---	---	---	---	---	0.75	2	17.8	0.6
	T651	Plate	1.00-5.00	1.00	10	23.3	1.0	1.00	19	21.4	1.2	0.50	2	17.8	0.1
2020	T652	Forging	2.00-6.00	0.75	12	28.8	3.6	0.75	13	21.9	3.2	0.50	3	18.1	1.4
	T651	Plate	1.37	1.00	8	23.0	2.4	1.00	4	17.2	0.3	---	---	---	---
	T81	Plate	1.00	0.99	3	27.0	0.5	---	---	---	---	---	---	---	---
	T81 REPAIR WELD + AGE WITH 2319 FILLER WIRE	Plate	1.00	---	---	---	---	1.00	6	15.8	0.7	---	---	---	---
2021	T81 WELD + AGE WITH 2319 FILLER WIRE	Plate	1.00	---	---	---	---	1.00	9	19.4	2.7	---	---	---	---
	T351	Plate	1.00-3.00	1.00	5	33.4	3.9	---	---	---	---	---	---	---	---
		Extrusion	3.00-5.00	---	---	---	---	1.50	5	25.0	0.9	---	---	---	---
	T3511	Extrusion	---	1.20	4	38.0	2.6	---	---	---	---	---	---	---	---
2024	T851	Plate	0.37-4.00	0.38	65	23.3	2.4	0.38	63	20.7	1.9	---	---	---	---
	T8510	Extrusion	2.76-4.50	1.86	3	30.4	2.7	2.00	3	16.5	1.0	1.00	3	15.7	1.4
	T8511	Extrusion	3.50	1.00	2	24.1	0.4	1.00	2	16.0	0.0	---	---	---	---
	T852	Forging	2.00-6.00	0.75	24	29.2	5.2	0.75	16	18.9	2.6	0.25	8	15.9	0.8

TABLE 7.0.2 (CONCLUDED)

**PLANE STRAIN FRACTURE TOUGHNESS VALUES OF ALUMINUM 2000/6000 SERIES ALLOYS
AT ROOM TEMPERATURE**

Alloy	Condition/ Heat Treatment	Product Form	Range of Product Thickness (in.)	K_{Ic} ($Ksi\sqrt{in}$)											
				Specimen Orientation											
				L-T			T-L			S-L					
				Min Spec Thk	n	Mean	Std Dev	Min Spec Thk	n	Mean	Std Dev	Min Spec Thk	n	Mean	Std Dev
2048	T851	Plate	1.00-4.00	1.00	22	37.9	1.9	1.00	24	30.6	2.5	0.75	18	25.4	1.9
2124	T851	Plate	0.62-6.00	0.50	364	29.7	2.8	0.50	362	25.1	2.3	0.50	393	21.7	2.1
	T851 (417)	Plate	1.57-5.50	0.50	27	28.9	2.8	0.50	28	23.8	2.4	0.50	19	21.3	2.0
	T851 (SP)	Plate	2.00-5.00	0.75	10	27.2	4.7	0.75	7	23.1	2.7	0.75	10	21.4	3.2
	T851	Plate	1.50-2.37	1.00	11	35.3	2.7	1.00	10	31.8	0.9	---	---	---	---
2214	T651 (417)	Plate	1.50-3.93	1.50	10	36.0	3.4	1.49	15	29.4	1.8	1.00	2	25.6	1.8
2219	T851	Plate	1.00-3.25	0.97	48	33.4	2.3	0.75	78	29.7	3.2	0.50	14	23.0	2.4
		Forging	---	---	---	---	---	---	---	---	---	1.00	85	25.6	3.1
	T852	Forging	2.00-7.50	1.50	25	39.2	3.2	1.50	24	27.1	2.2	0.75	60	25.3	3.1
	T87	Plate	1.00-2.00	1.00	6	28.0	3.0	0.97	2	22.0	0.4	---	---	---	---
2419	T87-300F 100HRS	Plate	1.50	1.47	2	34.8	0.4	---	---	---	---	---	---	---	---
	T851	Plate	1.75-3.00	1.50	23	42.6	5.3	1.40	52	37.2	4.2	1.00	3	24.8	2.5
	T651	Plate	3.34	---	---	---	---	---	---	---	---	1.00	12	14.9	1.2
6061	T651	Plate	1.50-2.50	---	---	---	---	1.00	5	26.6	0.9	1.00	2	21.5	0.4

TABLE 7.0.3.1
PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS
OF ALUMINUM 2000/6000 SERIES ALLOYS (WITHOUT BUCKLING CONSTRAINTS)

Alloy	Condition/ Heat Treatment	Test Temp (°F)	Specimen		Yield Strength (Ksi)	K_c (K_{sk}/\sqrt{in})												
						n - Sample size						Specimen Thickness (in.)						
			Orient	Width (in.)		0.063			0.125			0.250			1.0			
						n	μ	σ	n	μ	σ	n	μ	σ	n	μ	σ	
2014	T6	-423.	T-L	4.0	81.8	5	59.1	3.4	---	---	---	---	---	---	---	---	---	
		R.T.	T-L	16.0	65.4	5	58.4	2.7	---	---	---	---	---	---	---	---	---	
		R.T.	L-T	2.0	75.9-77.0	5	34.6	7.0	---	---	---	---	---	---	---	---	---	
			L-T	3.0	75.9	2	30.1	1.2	---	---	---	---	---	---	---	---	---	
2020	T6	R.T.	L-T	16.0	76.9	4	36.9	2.9	---	---	---	---	---	---	---	---	---	
			T-L	2.0	75.8-76.0	5	30.4	6.6	---	---	---	---	---	---	---	---	---	
			T-L	3.0	76.8	2	27.7	.8	---	---	---	---	---	---	---	---	---	
			L-T	3.0	77.4	---	---	---	---	---	---	---	---	---	---	---	---	
		R.T.	L-T	4.0	77.4	---	---	---	---	---	---	---	---	---	---	---	---	---
			L-T	20.0	76.1-77.5	---	---	---	---	---	---	---	---	---	---	---	---	---
			T-L	3.0	77.4-78.4	---	---	---	12	23.5	2.4	3	17.2	2.5	---	---	---	---
			T-L	4.0	78.0	---	---	---	---	---	---	---	---	---	---	---	---	---
			L-T	20.0	77.4-78.4	---	---	---	---	---	---	---	---	---	---	---	---	---
			L-T	3.0	68.6	---	---	---	7	40.2	3.3	---	---	---	---	---	---	---
2020 (ALCLAD)	T6	R.T.	L-T	16.0	68.0	2	34.1	1.8	---	---	---	---	---	---	---	---	---	
			T-L	3.0	68.4	---	---	---	7	30.4	5.0	---	---	---	---	---	---	---
			T-L	16.0	67.2	2	33.9	1.2	---	---	---	---	---	---	---	---	---	---
			L-T	20.0	58.2	---	---	---	---	---	---	---	---	---	---	---	---	---
2024	T351	R.T.	L-T	6.0	62.0	2	57.8	3.2	---	---	---	---	---	---	---	---	---	
			L-T	9.0	62.0	3	61.2	5.0	---	---	---	---	---	---	---	---	---	---
			L-T	15.0	62.0	2	54.5	.0	---	---	---	---	---	---	---	---	---	---
			L-T	18.0	62.0	2	54.5	.6	---	---	---	---	---	---	---	---	---	---
		R.T.	L-T	21.0	62.0	2	55.8	2.9	---	---	---	---	---	---	---	---	---	---
			L-T	24.0	62.0	2	52.1	.8	---	---	---	---	---	---	---	---	---	---
			L-T	6.0	62.0	2	57.8	3.2	---	---	---	---	---	---	---	---	---	---
			L-T	9.0	62.0	3	61.2	5.0	---	---	---	---	---	---	---	---	---	---

TABLE 7.0.3.1 (CONCLUDED)

**PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS
OF ALUMINUM 2000/6000 SERIES ALLOYS (WITHOUT BUCKLING CONSTRAINTS)**

Alloy	Condition/ Heat Treatment	Test Temp (°F)	Specimen		Yield Strength (Ksi)	K_c (Ksi/√in)												
						Specimen Thickness (in.)						n · Sample size μ · Mean σ · Standard Deviation						
			Orient	Width (in.)		0.063			0.125			0.250			1.0			
						n	μ	σ	n	μ	σ	n	μ	σ	n	μ	σ	
2024 (Cont'd)	T851	R.T.	L-T	20.0	65.8-66.1	---	---	---	---	---	---	---	---	---	---	---	---	---
			T-L	3.0	56.6-65.4	---	---	---	8	44.8	1.8	6	31.2	2.5	---	---	---	---
				4.0	65.8-68.0	---	---	---	---	---	---	7	47.1	8.0	---	---	---	---
				20.0	64.4-65.4	---	---	---	---	---	---	---	---	---	12	33.6	1.9	---
			L-T	16.0	72.9	5	52.9	4.7	---	---	---	---	---	---	---	---	---	---
2124	T86	R.T.	T-L	2.0	70.8-72.6	4	42.4	.5	---	---	---	---	---	---	---	---	---	
				16.0	71.2	5	45.8	3.1	---	---	---	---	---	---	---	---	---	
			T-L	3.0	57.4-62.9	---	---	---	---	---	---	---	---	---	---	---	---	---
			L-T	20.0	50.6-52.0	---	---	---	---	---	---	---	---	---	---	---	---	---
			T-L	20.0	49.3-51.2	---	---	---	---	---	---	---	---	---	---	---	---	---
2219	T87	R.T.	L-T	16.0	57.7	3	77.0	2.1	---	---	---	---	---	---	---	---	---	

TABLE 7.0.3.2

**PLANE STRESS AND TRANSITIONAL FRACTURE TOUGHNESS
OF ALUMINUM 2000/6000 SERIES ALLOYS (WITH BUCKLING CONSTRAINTS)**

Alloy	Condition/ Heat Treatment	Test Temp (°F)	Specimen		Yield Strength (Ksi)	K_{IC} (Ksi \sqrt{in})											
						Specimen Thickness (in.)						n - Sample size μ - Mean σ - Standard Deviation					
						0.063			0.1			0.125					
						n	μ	σ	n	μ	σ	n	μ	σ	n	μ	σ
2014	T6	-320.	L-T	4.0	74.1	2	59.2	1.1	---	---	---	---	---	---	---	---	---
				18.0	74.1	4	74.1	3.2	---	---	---	---	---	---	---	---	---
			T-L	3.0	75.9	9	46.5	5.3	---	---	---	---	---	---	---	---	---
				6.0	75.9	5	48.2	4.5	---	---	---	---	---	---	---	---	---
				12.0	75.9	15	49.7	3.8	---	---	---	---	---	---	---	---	---
				16.0	68.4	5	64.9	3.4	---	---	---	---	---	---	---	---	---
2024	T62 (GQ)	R.T.	L-T	18.0	65.2	5	71.9	3.4	---	---	---	---	---	---	---	---	---
				6.0	57.0	---	---	---	---	---	---	---	---	---	---	---	---
		R.T.	L-T	6.0	---	---	---	---	---	---	---	2	63.0	1.4	---	---	---
				6.0	---	---	---	---	---	---	---	2	77.1	5.8	---	---	---
		R.T.	T-L	6.0	---	---	---	---	---	---	---	2	72.3	2.0	---	---	---
				6.0	64.8	---	---	---	---	---	---	2	65.4	3.8	---	---	---
2219	T81	R.T.	L-T	6.0	62.0-64.1	---	---	---	---	---	---	3	57.3	1.9	---	---	---
			T-L	6.0	---	---	---	---	---	---	---	---	---	---	---	---	---
2219	T87	-423.	L-T	16.0	73.8	2	90.6	3.2	---	---	---	---	---	---	---	---	---
						---	---	---	---	---	---	---	---	---	---	---	---

TABLE 7.0.4.1

**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: Unspecified STRESS RATIO: -1.0 - 0.8 FREQUENCY: 5-30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-8} in/cycle)					
					ΔK Level (Ksi/in)					
					2.5	5.0	10.0	20.0	50.0	100.0
2219	T851	UNSPECIFIED	-1	5			4.31	29.14		
			0.1	5		0.48	7.07			
			0.3	30		0.7	6.81			
			0.5	30			8.29			
			0.8	5	0.12	3.08				
A201	T7	CASTING	0.1	25		0.31	2.86	21.26		
A357	T6	CASTING	0.1	25			2.82	309.7		
	T6; SOL. HEAT TREAT 1010F 24HRS; H2O Q AT 160F WITH 9 SEC QUENCH DELAY	CASTING	0.2	25			1.09	158.8		

TABLE 7.0.4.2

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**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: L-T STRESS RATIO: -1.0 - 0.8 FREQUENCY: 0.1 - 30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
					ΔK Level (Ksi/in)					
					2.5	5.0	10.0	20.0	50.0	100.0
2014	T6	SHEET	0.05	2			6.39			
			0.05	2			6.12			
			0.25	2			8.73			
			0.25	2			10.39			
			0.4	2		1.31	13.69			
			0.4	2		1.41				
2020	T6		0.5	2		1.6				
			0.57	2		1.03				
		SHEET	0.	13.3				103.95		
		PLATE	-0.5	5.2			3.4			
2024	T651		0.	5.2			3.41			
			0.	13.3				28.56		
			0.05	5	0.04	0.44	5.11	37.22		
			0.05	5		0.23	4.34	94		
			0.05	10		0.27	4.1	31.19		
			0.2	10		0.24	10.21	29.54		

TABLE 7.0.4.2 (CONTINUED)

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**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: L-T STRESS RATIO: -1.0 - 0.8 FREQUENCY: 0.1 - 30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
					ΔK Level (Ksi/in)						
					2.5	5.0	10.0	20.0	50.0	100.0	
2024 (Cont'd)	T3 (Cont'd)	SHEET (Cont'd)	0.33	3-33					196.72		
			0.4	5	0.09	0.47	8.19	108.59			
			0.4	5	0.09	0.65	9.28	84.19			
			0.4	8-15		0.45	9.34	134.24			
			0.8	10	0.16	1.89	29.04				
			0.8	10-15	0.15	1.12	18.49				
			-1	20			10.37	72.53			
	PLATE	-0.5	20		0.17	12.2	68.27				
		0.05	20			9.8					
		0.	6			6.14	44.18				
	SHEET	0.4	3				165.36				
		0.8	6			39.33					
		-1	2-3				108.2				
	PLATE	-1	5		0.27	8.6	43.66				
		-1	3-6				62.29				
		-1	2-10		0.5	10.3	152.02				

TABLE 7.0.4.2 (CONTINUED)

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**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: L-T STRESS RATIO: -1.0 - 0.8 FREQUENCY: 0.1 - 30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-4} in/cycle)					
					ΔK Level (Ksi/in)					
					2.5	5.0	10.0	20.0	50.0	100.0
2024 (Cont'd)	T351 (Cont'd)	PLATE (Cont'd)	-0.5	3-5		0.3	6.24	45.67		
			0.	1-6						
			0.	10-20		0.16				
			0.01	2-5		0.22	5.84	49.75		
			0.01	20			5.98	52.12		
			0.05	5						
			0.05	5				65.03		
			0.05	10		0.35	7.28	42.32		
			0.05	5-15		0.17	6.04	45.39		
			0.1	3				54.97		
			0.1	20			8.51			
			0.3	20			10.52			
			0.33	25			8.21			
			0.4	3				241.62		
			0.4	5		0.69	11.71			
			0.4	10		0.55	6	83.87		

TABLE 7.0.4.2 (CONTINUED)

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**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: L-T STRESS RATIO: -1.0 - 0.8 FREQUENCY: 0.1 - 30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
					ΔK Level (Ksi $\sqrt{\text{in}}$)					
					2.5	5.0	10.0	20.0	50.0	100.0
2024 (Cont'd)	T351 (Cont'd)	PLATE (Cont'd)	0.4	10		0.52				
			0.4	12	0.04	0.57	10.72			
			0.5	20			13.16			
			0.6	10		0.81	12.69			
			0.6	20			14.67			
			0.8	1-5		1.65	32.4			
			0.8	5-10		1.42				
			0.8	5-10			27.69			
			0.8	15	0.12	1.19				
			0.8	3-16			56.84			
			0.8	20	0.13	1.79				
			0.05	9		0.13				
			0.1	20		0.14	5.32	72.99		
			0.5	9	0.08					
	T3511	EXTRUSION	0.5	20	0.04	0.46	12.95			
			0.8	20		1.3				
			0.8	25	0.13					

TABLE 7.0.4.2 (CONTINUED)

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**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: L-T STRESS RATIO: -1.0 - 0.8 FREQUENCY: 0.1 - 30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)							
					ΔK Level (Ksi/in)							
					2.5	5.0	10.0	20.0	50.0	100.0		
2024 (Cont'd)	T42	PLATE	-1	10			6.41	43.76				
			0.02	10			4.41	20.66	998.91			
			0.5	10		0.43	7.79	43.92				
	T81	SHEET	0.05	2				63.62				
			0.4	2				100.13				
2091	T851	PLATE	0.02	10			3.59	43.67				
			0.02	1-10			3.46	11.27				
	T81 335F 32HRS	SHEET	0.1	5			6.18	37.78				
			T851 335F 16HRS	PLATE	0.1	5			6.36	56.32		
					-1	6			6.96			
2219	T851	PLATE	-1	1-20			5.68	48.49				
			-0.5	5.2			6.89					
			-0.3	6			7.01	51.71				
			-0.1	6			6.87	43.87				
			0.	5.2			8.31	53.58				
			0.	6			4.29	33.74				

TABLE 7.0.4.2 (CONTINUED)

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**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: L-T STRESS RATIO: -1.0 - 0.8 FREQUENCY: 0.1 - 30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
					ΔK Level (Ksi $\sqrt{\text{in}}$)					
					2.5	5.0	10.0	20.0	50.0	100.0
2219 (Cont'd)	T851 (Cont'd)	PLATE (Cont'd)	0.01	3				43.24		
			0.01	6				46.17		
			0.04	1-20			4.05			
			0.05	1-20			3.58			
			0.05	1-20			2.47	33.87		
			0.05	1-20			5.18	48.49		
			0.08	6			5.19			
			0.1	1-20				44.89		
			0.2	6				91.24		
			0.3	6		0.7	7.7	75.84		
			0.5	1-20			10.13			
			0.6	1-20			12.81			
2419	T851	PLATE	0.7	6		1.37	17.57			
			0.1	30			6.5	51.72		
			0.4	2			7.77			
6061	T851	PLATE	0.1	---			55.48			

TABLE 7.0.4.2 (CONCLUDED)

7 of 7

**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: L-T STRESS RATIO: -1.0 - 0.8 FREQUENCY: 0.1 - 30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
					ΔK Level (Ksi/in)					
					2.5	5.0	10.0	20.0	50.0	100.0
AL905XL	Unspecified	FORGING	0.1	10	0.3	2.68				
			0.1	25	0.85	4.15				
			0.1	30	0.33	4.46				
			0.1	---			11.1	49.74		
IN905XL	850F 2HRS; 665F 2HRS; WARM H2O Q; 230F 24HRS	FORGING	0.1	3			11.9			
			0.1	3				82.03		
			0.02	1-15		3.54	22	268.45		
			0.02	1-20	0.32	1.33	11.21			

TABLE 7.0.4.3

1 of 3

**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: T-L STRESS RATIO: 0.0 - 0.8 FREQUENCY: 0.1 - 30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
					ΔK Level (Ksi/in)					
					2.5	5.0	10.0	20.0	50.0	100.0
2014	T6	SHEET	0.05	2			6.34			
			0.05	2			7.7			
			0.25	2			11.44			
			0.25	2			10.65			
			0.4	2		1.28	14.32			
			0.4	2			19.29			
			0.5	2		1.69				
			0.57	2		1.32				
			0.57	2		1.16				
			0.05	9			1.87			
2024	T3	SHEET	0.05	3-10		0.34	4.55	42.37		
			0.05	30		0.26				
			0.4	0.5-15	0.08	0.78	12.68	107.65		
			0.4	30		0.95				
			0.6	30		1.24				
			0.8	2-10	0.17	1.65	28.91			

TABLE 7.0.4.3 (CONTINUED)

2 of 3

**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: T-L STRESS RATIO: 0.0 - 0.8 FREQUENCY: 0.1 - 30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-4} in/cycle)				
					ΔK Level (Ksi/in)				
					2.5	5.0	10.0	20.0	50.0
2024 (Cont'd)	T852	FORGING	0.33	5.17			5.53		
			0.08	0.1-0.3				666.53	
			0.08	10-15		0.68	7.97		
			0.1	0.1-0.4				792.88	
			0.1	2-3				92.68	
			0.1	6				108.72	
			0.1	4-9			7.84		
			0.1	10			9.92		
			0.1	3-10				790.1	
			0.1	13		1			
			0.1	10-15		1.07	9.82		
			0.4	10-15		1.26	31.84		
		PLATE	0.1	1				153.61	
			0.1	1.5-5				173.27	
			0.1	10			6.94		
2024 (Cont'd)	T861	SHEET	0.33	5.17			5.53		
			0.08	0.1-0.3				666.53	
			0.08	10-15		0.68	7.97		
			0.1	0.1-0.4				792.88	
			0.1	2-3				92.68	
			0.1	6				108.72	
			0.1	4-9			7.84		
			0.1	10			9.92		
			0.1	3-10				790.1	
			0.1	13		1			
			0.1	10-15		1.07	9.82		
			0.4	10-15		1.26	31.84		
		PLATE	0.1	1				153.61	
			0.1	1.5-5				173.27	
			0.1	10			6.94		

TABLE 7.0.4.3 (CONCLUDED)

3 of 3

**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: T-L STRESS RATIO: 0.0 - 0.8 FREQUENCY: 0.1 - 30 Hz

ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-4} in/cycle)					
					ΔK Level (K_{SI}/in)					
					2.5	5.0	10.0	20.0	50.0	100.0
2024 (ALCLAD)	T3	SHEET	0.	13.3			3.52	21.01		
			0.33	13.3			7.14	62.46		
2091	T3	SHEET	0.02	1-25		0.46	2.42	28.28		
	T81 335F 32HRS	SHEET	0.1	5		0.41	3.76	40.5		
	T851 335F 16HRS	PLATE	0.1	5		0.58	7.59	61.17		
2419	T851	PLATE	0.1	30			5.32			
AL905XL	Unspecified	FORGING	0.1	10	0.28	3.05				
			0.1	30	0.34	2.56				
			0.1	---		0.98	8.07	43.62		
			0.33	---		3.15	19.17			
IN905XL	850F 2HRS; 665F 2HRS; WARM H2O Q; 230F 24HRS	FORGING	0.1	6			17.71	171.44		
			0.1	6		3.69				
			0.02	0.1-20	1.24	18.92				
	Unspecified	FORGING	0.02	0.1-25	0.07	1.68	14.82	149.84		

TABLE 7.0.4.4

1 of 1

**FATIGUE CRACK GROWTH RATE (FCGR) COMPARISON
AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
FOR ALUMINUM 2000/6000 SERIES ALLOYS IN LAB AIR AT ROOM TEMPERATURE**

ORIENTATION: S-T		STRESS RATIO: 0.1 - 0.33		FREQUENCY: 10 - 30 Hz					
ALLOY	CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-8} in/cycle)				
					ΔK Level (Ksi/in)				
					2.5	5.0	10.0	20.0	50.0
AL905XL	Unspecified	FORGING	0.1	10	0.31	2.96			
			0.1	25	0.52	3.86	11.25		
			0.1	30		4.86			
			0.1	---		0.07	0.05	103.53	
			0.33	---		1.28	7.64		

TABLE 7.0.5

STRESS CORROSION CRACKING THRESHOLD DATA FOR ALUMINUM 2000/6000 SERIES ALLOYS AT ROOM TEMPERATURE									
Alloy	Condition/ Heat Treatment	Product Form	Specimen Orientation	K_{Loc} $K_{Stk/in}$					
				Environment					
				3.5% NaCl	Industrial ATM	Sump Tank Water	Salt- Dichromate Acetate	Seacoast ATM	
2014	T651	Plate	S-L	7	7	7			
2020	T651	Plate	S-L				9		
	T81	Plate	S-L	19	19	19			
	T81 OVERHEATED WELD	Plate	S-L				11.3		
	T81 REPAIRED WELD AGED 16HR 325F HEAT AFFECTED ZONE	Plate	S-L				11.9		
2021	T81 REPAIRED WELD AGED 16HR 325F WELD CENTER LINE	Plate	S-L				10.3		
	T81 REPAIRED WELD AGED 16HR 325F WELD FUSION LINE	Plate	S-L				7.7		
	T81 WELDED AGED 16HR 325F FUSION LINE	Plate	S-L				8.5		
	T81 WELDED AGED 16HR 325F HEAT AFFECTED ZONE	Plate	S-L				13.3		
	T81 WELDED AGED 16HR 325F WELD CENTER LINE	Plate	S-L				7.2		
	T351	Plate	S-L	10	9	10	10		
	T851	Plate	L-T				21.5		
2024	T852	Forging	S-L	16	15	16			
			L-T						22.8(3)
			T-L						20.6(4)
			S-L						16.8(2)

TABLE 7.0.5 (CONCLUDED)

2 of 2

STRESS CORROSION CRACKING THRESHOLD DATA FOR ALUMINUM 2000/6000 SERIES ALLOYS AT ROOM TEMPERATURE									
Alloy	Condition/ Heat Treatment	Product Form	Specimen Orientation	K_{Isc} Ksi/in					
				Environment					
				3.5% NaCl	Industrial ATM	Sump Tank Water	Salt- Dichromate Acetate	Seacoast ATM	
2124	T851	Plate	L-T						26.4(4)
			S-L						23.3(4)
2219	T37	Plate	S-L	13	9	13			
			L-T						34.5(2)
	T851	Plate	T-L						27
			S-L					18	29.5(2)
6061	T87	Plate	S-L	19	19	19			
	T651	Plate	S-L	20	20	20			

TABLE 7.1.1.1

1 of 1

**MEAN PLANE STRAIN FRACTURE TOUGHNESS
FOR ALUMINUM 2000/6000 SERIES ALLOY 2014 AT ROOM TEMPERATURE**

Product Form	Condition/Heat Treatment	K_{Ic} (ksi \sqrt{in})									
		Specimen Orientation									
		L-T			T-L			S-L			
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	
Plate	T651	23.3	1.	10	21.4	1.2	19	17.8	0.1	2	
	T6	27.9	0.8	2	17.4	1.7	4	16.9	1.9	5	
Forging	T611	---	---	---	---	---	---	17.8	0.6	2	
	T652	28.8	3.6	12	21.9	3.2	13	18.1	1.4	3	
Forged Bar	T6	---	---	---	16.7	0.6	2	---	---	---	

TABLE 7.1.1.2.1

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2014 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level ($KSI\sqrt{in}$)				
				2.5	5.0	10.0	20.0	50.0
T6	FORGING	-1	9		0.73	9.01	47.65	100.0

TABLE 7.1.1.2.2

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2014 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T8	SHEET	0.05	2			6.39			
		0.05	2			6.12			
		0.25	2			8.73			
		0.25	2			10.39			
		0.4	2		1.31	13.69			
		0.4	2		1.41				
		0.5	2		1.6				
		0.57	2		1.03				

TABLE 7.1.1.2.3

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2014 AT ROOM TEMPERATURE

ORIENTATION: T-L

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T6	FORGING	-1	9		1.21	16.93			
		0.05	9		1.21	21.88			

TABLE 7.1.1.2.4

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2014 AT ROOM TEMPERATURE

ORIENTATION: T-L

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T6	SHEET	0.05	2			6.34			
		0.05	2			7.7			
		0.25	2			11.44			
		0.25	2			10.65			
		0.4	2		1.28	14.32			
		0.4	2			19.29			
		0.5	2		1.69				
		0.57	2		1.16				
		0.57	2		1.32				
	FORGING	0.05	9			1.87			

TABLE 7.1.2.1

ALUMINUM 2014 K _{Ic}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{Ic} /√a) ³ (in.)	K _{Ic}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{Ic} (Ksi√in.)	K _{Ic} MEAN	STAN DEV		
T6	Forging	0.89	R.T.	L-T	63.8	1.500	0.714	NB	0.798	0.50	28.50	27.9	0.8	1973	86213
		0.89				1.500	0.713	NB	0.778	0.46	27.30			1973	86213
T6	Forging	0.89	R.T.	T-L	62.4	0.500	0.249	NB	0.266	0.15	15.50	17.4	1.7	1973	86213
		0.89				0.500	0.249	NB	0.269	0.17	16.50			1973	86213
		0.89				0.490	0.249	NB	0.258	0.23	19.20			1973	86213
		0.89				0.500	0.249	NB	0.266	0.21	18.20			1973	86213
T6	Forging	8.00	R.T.	S-T	61.0	2.000	1.000	NB	---	0.24	19.00	19.1	0.1	1972	82675
		8.00				2.000	1.000	NB	1.000	0.24	19.10			1972	82675
		8.00				2.000	1.000	NB	---	0.24	19.10			1972	82675
		8.00				2.000	1.000	NB	1.000	0.24	19.00			1972	82675
T6	Forging	8.00	R.T.	S-L	61.0	1.000	1.000	NB	0.500	0.17	15.70	16.9	1.9	1972	82675
		8.00				1.000	1.000	NB	0.500	0.18	16.40			1972	82675
		8.00				1.000	1.000	NB	---	0.17	15.70			1972	82675
		8.00				1.000	1.000	NB	---	0.18	16.40			1972	82675
T6	Forging	1.00	R.T.	L-C	63.8	1.500	0.749	CT	0.778	0.25	20.30	27.9	0.8	1973	86213
		---				1.500	0.750	NB	0.750	0.50	28.50			1972	82879
T6	Forging	---	R.T.	C-L	63.8	1.500	0.750	NB	0.750	0.46	27.30	16.7	2.4	1972	82879
		---				0.500	0.250	NB	0.250	0.21	18.20			1972	82879
		---				1.500	0.750	CT	0.750	0.13	14.30			1972	82879
		---				1.500	0.750	CT	0.750	0.14	15.10			1972	82879
T6	Forging	0.89	84	T-L	62.4	1.500	0.750	CT	0.753	0.14	14.90	---	---	1973	86213

TABLE 7.1.2.1 (CONTINUED)

ALUMINUM 2014 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T6	Forged Bar	4.50	R.T.	L-T	64.2	1.490	0.689	NB	0.737	0.49	28.40	...	...	1973	86213
T6	Forged Bar	4.50	R.T.	T-L	62.4	0.500	0.249	NB	0.268	0.19	17.10	16.7	0.6	1973	86213
		4.50			0.500	0.249	NB	0.267	0.17	16.30	1973			86213	
T6	Forged Bar	4.50	82	T-L	62.4	1.500	0.749	CT	0.762	0.19	17.40	...	...	1973	86213
T6	Forged Bar	4.50	85	T-L	62.4	1.500	0.750	CT	0.783	0.21	17.90	17.3	0.9	1973	86213
		4.50			1.500	0.751	CT	0.749	0.18	16.60	1973			86213	
T61	Forging	1.50	R.T.	S-T	56.6	1.000	0.500	CT	0.486	0.31	19.90	19.9	0.0	1973	86213
		1.50			1.000	0.500	CT	0.508	0.31	19.90	1973			86213	
T61	Forging	1.95	82	S-L	62.4	1.000	0.499	CT	0.491	0.22	18.70	18.2	0.7	1973	86213
		1.95			1.000	0.499	CT	0.479	0.20	17.70	1973			86213	
T611	Forging	1.00	R.T.	S-L	60.2	1.490	0.750	CT	0.783	0.23	18.20	17.8	0.6	1973	86213
		1.00			1.490	0.749	CT	0.771	0.21	17.30	1973			86213	
T611	Forging	1.00	86	S-L	61.3	1.500	0.749	CT	0.778	0.24	19.00	18.7	0.2	1973	86213
		1.00			1.500	0.749	CT	0.767	0.23	18.60	1973			86213	
		1.00			1.500	0.747	CT	0.797	0.22	18.50	1973			86213	
		1.00			1.500	0.749	CT	0.802	0.23	18.80	1973			86213	
		1.00			2.000	1.018	NB	1.008	0.90	26.10	1973			86213	
T651	Plate	1.00	-320	T-L	75.0	2.000	1.020	NB	1.010	0.90	26.10	26.1	0.0	1971	84288

TABLE 7.1.2.1 (CONTINUED)

ALUMINUM 2014 K_{10}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	$2.5 \cdot (K_{10}/TYS)^2$ (in.)	K_{10}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K_{10} (Ksi/in.)	K_{10} MEAN	STAN DEV		
T651	Plate	5.00	R.T.	L-T	58.6	2.000	0.999	NB	0.975	0.37	22.40	23.3	1.0	1973	86213
		2.50			64.4	1.990	1.001	CT	0.970	0.33	23.30			1973	86213
		2.50			64.4	2.000	1.000	CT	0.966	0.34	23.60			1973	86213
		1.00			65.4	2.000	1.020	NB	0.965	0.35	24.70			1973	86213
		1.00			65.4	2.000	1.018	NB	0.970	0.32	23.50			1973	86213
		1.00			65.4	2.000	1.019	NB	0.961	0.35	24.80			1973	86213
		1.00			65.4	2.000	1.020	NB	1.000	0.33	24.00			1973	86213
		1.75			65.4	2.000	0.999	NB	0.957	0.26	21.90			1973	86213
		1.75			65.4	2.000	0.998	NB	0.960	0.27	22.40			1973	86213
		1.75			65.4	1.990	0.999	NB	0.960	0.27	22.30			1973	86213
		5.00			57.8	2.000	1.000	NB	0.997	0.27	19.10			1973	86213
		1.00			65.8	2.000	1.016	NB	0.989	0.26	20.90			1971	84288
T651	Plate	1.00	R.T.	T-L	65.8	2.000	1.022	NB	1.008	0.27	21.80	21.4	1.2	1973	86213
		1.00			65.8	2.000	1.016	NB	0.985	0.26	20.90			1971	84288
		1.00			65.8	2.000	1.016	NB	0.965	0.24	20.30			1973	86213
		1.00			65.8	2.000	1.000	CT	1.084	0.26	21.20			1973	86213
		1.00			65.8	2.000	1.016	NB	0.970	0.25	21.00			1971	84288
		1.00			65.8	2.000	1.023	NB	0.980	0.26	21.90			1973	86213
		1.00			65.8	2.000	1.022	NB	1.023	0.29	22.30			1973	86213
		1.00			65.8	2.000	1.023	NB	0.997	0.28	22.10			1973	86213
		1.00			65.8	2.000	1.016	NB	0.961	0.25	20.70			1973	86213
		1.00			65.8	1.990	1.023	NB	1.000	0.28	22.00			1973	86213
		1.00			65.8	2.000	1.016	NB	0.998	0.29	22.60			1971	84288

TABLE 7.1.2.1 (CONTINUED)

ALUMINUM 2014 K ₁₀															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₁₀ TYS) ^a (in.)	K ₁₀			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K ₁₀ (K ₁₀ /in.)	K ₁₀ MEAN	STAN DEV		
T651 Cont'd	Plate Cont'd	1.00	R.T. Cont'd	T-L Cont'd	65.8	2.000	1.016	NB	0.960	0.24	20.20	Cont'd	Cont'd	1973	86213
		1.00			65.8	2.000	1.016	NB	0.981	0.23	20.10			1973	86213
		1.00			65.8	2.000	1.016	NB	1.001	0.24	20.70			1971	84288
		1.75			66.2	2.000	1.000	NB	0.980	0.29	22.50			1973	86213
		1.75			66.2	2.000	0.997	NB	1.063	0.32	23.60			1973	86213
		1.75			66.2	2.000	1.000	NB	1.010	0.32	23.60			1973	86213
T651	Plate	5.00	R.T.	S-L	55.0	1.000	0.501	NB	0.529	0.26	17.90	17.8	0.1	1973	86213
		5.00			55.0	1.000	0.498	NB	0.522	0.26	17.70			1973	86213
		1.00			62.7	2.000	1.001	CT	1.006	0.39	24.90			1973	86213
T651	Plate	1.00	84	L-T	63.5	2.000	1.002	CT	0.966	0.26	20.30	22.7	1.6	1973	86213
		1.00			66.4	2.000	1.002	CT	0.960	0.29	22.70			1973	86213
		1.00			66.4	2.000	1.002	CT	0.973	0.29	22.50			1973	86213
		1.00			66.4	2.000	1.002	CT	0.949	0.30	23.00			1973	86213
		1.00			63.5	2.000	1.002	CT	0.981	0.27	20.70			1973	86213
		1.00			65.8	2.000	1.000	CT	0.984	0.22	19.50			1973	86213
T651	Plate	1.00	84	T-L	65.8	2.000	1.001	CT	0.978	0.23	20.00	20.0	0.5	1973	86213
		1.00			65.8	2.000	1.001	CT	0.964	0.22	19.60			1973	86213
		1.50			66.7	1.000	0.500	CT	0.490	0.31	23.40			1973	86213
		1.50			66.7	1.000	0.499	CT	0.503	0.33	24.10			1973	86213
T651	Plate	1.50	88	L-S	66.7	1.000	0.501	CT	0.495	0.21	19.50	19.3	0.2	1973	86213
		1.50			66.7	1.000	0.501	CT	0.499	0.21	19.20			1973	86213
		1.50			66.7	1.000	0.501	CT	0.491	0.21	19.30			1973	86213

TABLE 7.1.2.1 (CONTINUED)

ALUMINUM 2014 K_{Ic}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	$2.5 \cdot (K_{Ic}/TYS)^2$ (in.)	K_{Ic}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K_{Ic} (Ksi√in.)	K_{Ic} MEAN	STAN DEV		
T651	Plate	1.50	88	T-S	63.2	1.000	0.500	CT	0.504	0.33	22.80	22.4	0.5	1973	86213
		1.50			63.2	1.000	0.501	CT	0.510	0.32	22.50			1973	86213
		1.50			63.2	1.000	0.500	CT	0.506	0.30	21.80			1973	86213
T651	Plate	1.50	88	T-L	63.2	1.000	0.500	CT	0.500	0.22	18.70	19.2	0.7	1973	86213
		1.50			63.2	1.000	0.500	CT	0.519	0.24	19.70			1973	86213
		5.00			60.7	3.000	1.500	NB	1.498	0.62	30.20			1970	77720
T652	Forging	5.00	R.T.	L-T	60.7	3.000	1.500	NB	1.460	0.54	28.20	28.8	3.6	1970	77720
		5.00			60.7	3.000	1.500	NB	1.530	0.58	29.20			1970	77720
		4.00			62.5	3.000	1.502	NB	1.485	0.75	34.20			1970	77720
		4.00			62.5	3.000	1.502	NB	1.577	0.80	35.40			1970	77720
		4.00			62.5	3.000	1.502	NB	1.442	0.69	32.80			1970	77720
		3.00			66.2	2.000	1.000	NB	0.925	0.39	26.30			1970	77720
		3.00			66.2	1.990	1.000	NB	0.970	0.40	26.50			1970	77720
		3.00			66.2	2.000	1.000	NB	0.968	0.42	27.10			1970	77720
		2.00			66.5	1.500	0.750	NB	0.688	0.35	24.90			1970	77720
		2.00			66.5	1.500	0.752	NB	0.728	0.33	24.30			1970	77720
		2.00			66.5	1.500	0.751	NB	0.752	0.41	26.90			1970	77720
		2.00			66.5	1.500	0.751	NB	0.752	0.41	26.90			1970	77720

TABLE 7.1.2.1 (CONCLUDED)

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ALUMINUM 2014 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TVS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T652	Forging	5.00	R.T.	T-L	57.3	3.000	1.500	NB	1.662	0.24	17.90	21.9	3.2	1970	77720
		5.00			57.3	3.000	1.500	NB	1.597	0.33	20.70			1970	77720
		5.00			57.3	3.000	1.500	NB	1.612	0.31	20.10			1970	77720
		6.00			57.7	4.000	2.005	NB	2.092	0.49	25.40			1970	77720
		6.00			57.7	4.000	2.004	NB	2.215	0.39	22.80			1970	77720
		6.00			57.7	4.000	2.003	NB	1.987	0.66	29.80			1970	77720
		4.00			59.2	3.000	1.502	NB	1.562	0.37	22.70			1970	77720
		4.00			59.2	3.000	1.502	NB	1.497	0.38	23.00			1970	77720
		4.00			59.2	3.000	1.502	NB	1.642	0.40	23.70			1970	77720
		2.00			64.9	1.500	0.754	NB	0.748	0.22	19.20			1970	77720
		2.00			64.9	1.500	0.753	NB	0.727	0.22	19.30			1970	77720
		3.00			65.1	2.000	0.999	NB	1.030	0.24	20.30			1970	77720
T652	Forging	3.00	R.T.	S-L	65.1	1.990	0.999	NB	1.025	0.22	19.50	18.1	1.4	1970	77720
		5.00			56.1	1.000	0.500	NB	0.467	0.25	17.80			1970	77720
		5.00			56.1	1.000	0.501	NB	0.470	0.31	19.60			1970	77720
		5.00			56.1	1.000	0.498	NB	0.510	0.22	16.80			1970	77720

TABLE 7.1.2.2

ALUMINUM 2014 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a ₀	FINAL (in.) 2a _c	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{max} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi/in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																			
T6	Sheet	0.06	-423	L-T	83.4	4.000	0.062	1.220	1.700	---	41.80	61.43	59.9	2.9	77.08*	---	---	1963	51527
		0.06			83.4	4.000	0.062	1.240	1.620	---	42.00	62.35			74.70*			1963	51527
		0.06			83.4	4.000	0.062	1.240	1.650	---	41.20	61.16			74.28*			1963	51527
		0.06			83.4	4.000	0.062	1.290	1.700	---	36.10	54.95			66.57			1963	51527
		0.06			83.4	4.000	0.063	1.230	1.650	---	40.50	59.82			73.02*			1963	51527
T6	Sheet	0.06	-320	L-T	74.1	3.950	0.062	1.230	1.660	---	40.70	60.21	56.8	2.8	73.95*	59.2	1.1	1963	51527
		0.06			74.1	3.990	0.063	1.230	1.420	---	37.00	54.67			60.02			1963	51527
		0.06			74.1	3.990	0.063	1.230	1.740	---	39.80	58.80			74.77*			1963	51527
		0.06			74.1	3.990	0.063	1.240	---	---	38.20	56.73			---			1963	51527
		0.06			74.1	3.990	0.063	1.230	1.410	---	36.20	53.49			58.44			1963	51527
T6	Sheet	0.06	-320	L-T	74.1	18.040	0.063	5.490	7.300	---	19.40	60.46	61.8	1.9	73.23	74.2	3.2	1963	51527
		0.06			74.1	18.040	0.063	5.480	7.100	---	19.40	60.39			71.77			1963	51527
		0.06			74.1	18.060	0.063	5.480	7.400	---	20.70	64.43			78.91			1963	51527
		0.06			74.1	18.040	0.064	5.480	6.980	---	19.90	61.95			72.73			1963	51527
		0.06			74.1	18.050	0.064	5.480	---	---	---	---			---			1963	51527
T6	Sheet	0.06	R.T.	L-T	67.5	2.000	0.064	0.625	0.970	---	38.60	40.68*	---	---	56.01*	---	---	1973	86213
		0.06			67.5	2.000	0.064	0.625	1.020	---	38.30	40.37*			58.11*			1973	86213
		0.06			67.6	2.000	0.064	0.623	0.840	38.90	38.90	40.92*			50.27*			1973	86213
		0.06			67.6	2.000	0.064	0.624	0.950	---	38.90	41.00*			55.45*			1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.1.2.2 (CONTINUED)

ALUMINUM 2014 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in.)	K _{app} MEAN	STAN DEV	K _C (Ksi√in.)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES RESTRAINED																				
T6 Cont'd	Sheet Cont'd	0.06	R.T. Cont'd	L-T Cont'd	67.6	2.000	0.064	0.622	0.850	---	39.50	41.55*	Cont'd	Cont'd	Cont'd	Cont'd	51.50*	Cont'd	1973	86213
		0.06			67.5	2.000	0.065	0.624	0.860	---	39.80	41.95*					1973		86213	
		0.06			67.5	2.000	0.065	0.620	0.860	---	40.10	42.09*					1973		86213	
		0.06			67.5	2.000	0.065	0.622	0.890	---	40.10	42.18*					1973		86213	
		0.06			66.2	2.000	0.067	0.625	0.980	---	38.10	40.16*					1973		86213	
T6	Sheet	0.06	R.T.	L-T	65.2	3.980	0.063	1.240	1.600	---	38.10	56.60*	---	---	---	---	67.23*	---	1963	51527
		0.06			65.2	3.990	0.063	1.240	1.540	---	38.20	56.73*					1963		51527	
		0.06			65.2	3.990	0.063	1.230	1.540	---	36.90	54.52*					1963		51527	
		0.06			65.2	3.990	0.063	1.230	1.550	---	37.80	55.85*					1963		51527	
		0.06			65.2	4.000	0.063	1.250	1.550	---	37.90	56.55*					1963		51527	
T6	Sheet	0.06	R.T.	L-T	68.4	15.810	0.063	6.000	7.020	---	16.40	55.35	66.5	3.3	65.0	67.00	65.43	3.4	1973	86213
		0.06			68.4	15.810	0.064	3.010	3.570	---	27.40	60.95							1973	86213
		0.06			68.4	15.810	0.064	4.000	5.230	---	22.50	58.73							1973	86213
		0.06			68.4	15.820	0.064	6.000	7.000	---	16.10	54.33							1973	86213
		0.06			68.4	15.820	0.064	1.000	1.520	---	42.10	52.89							1973	86213
T6	Sheet	0.06	R.T.	L-T	65.2	18.040	0.063	5.490	6.350	---	20.70	64.51	65.2	1.4	72.0	68.75	71.58	3.4	1963	51527
		0.06			65.2	18.040	0.063	5.490	6.110	---	20.60	64.20							1963	51527
		0.06			65.2	18.050	0.063	5.490	6.400	---	20.80	64.82							1963	51527

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.1.2.2 (CONTINUED)

ALUMINUM 2014 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS			K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES RESTRAINED																				
T6 Cont'd	Sheet Cont'd	0.06	R.T. Cont'd	L-T Cont'd	65.2	18.060	0.063	5.490	6.800	---	21.70	67.62	Cont'd	Cont'd	77.84	Cont'd	Cont'd	1963	51527	
		0.06			65.2	18.060	0.063	5.480	6.300	---	20.80	64.74			70.82			1963	51527	
		0.06			75.9	3.000	0.058	0.130	0.210	---	63.70	28.82*			36.70*			1967	68908	
		0.06			75.9	3.000	0.058	0.130	0.160	---	63.30	28.64*			31.79*			1967	68908	
		0.06			75.9	3.000	0.058	0.300	0.410	---	49.90	34.47			40.51			1967	68908	
		0.06			75.9	3.000	0.059	0.300	0.430	---	49.70	34.33			41.37			1967	68908	
		0.06			75.9	3.000	0.059	0.300	0.420	---	50.40	34.81			41.44			1967	68908	
		0.06			75.9	3.000	0.060	1.000	1.400	---	30.50	41.08			52.47			1967	68908	
		0.06			75.9	3.000	0.060	0.500	0.730	---	44.20	39.86			49.14			1967	68908	
		0.06			75.9	3.000	0.061	0.500	0.850	---	43.40	39.13			52.79			1967	68908	
T6	Sheet	0.06	-320	T-L	75.9	3.000	0.061	0.500	0.580	---	42.10	37.96	38.1	2.9	41.14	46.6	5.3	1967	68908	
		0.06				75.9	3.000	0.061	1.010	1.300	---	30.40			41.21			49.28	1967	68908
		0.06				75.9	3.000	0.061	0.130	0.190	---	66.50			30.09*			36.42*	1967	68908
		0.06				75.9	3.010	0.061	1.000	1.390	---	29.90			40.25			51.08	1967	68908
		0.06				75.9	6.000	0.060	0.130	0.180	---	65.90			29.79*			35.06*	1967	68908
		0.06				75.9	6.000	0.060	0.130	0.200	---	66.80			30.19*			37.47*	1967	68908
		0.06				75.9	6.000	0.061	0.250	0.380	---	56.20			35.26			43.53	1967	68908
		0.06				75.9	6.000	0.061	0.250	0.370	---	56.50			35.44			43.17	1967	68908
		0.06				75.9	6.000	0.061	0.130	0.200	---	64.90			29.34*			36.40*	1967	68908
		0.06				75.9	6.000	0.061	0.130	0.200	---	64.90			29.34*			36.40*	1967	68908
T6	Sheet	0.06	-320	T-L	75.9	6.000	0.061	0.250	0.370	---	56.50	35.44	39.4	4.4	43.53	48.3	4.6	1967	68908	
		0.06				75.9	6.000	0.061	0.250	0.370	---	56.50			35.44			43.17	1967	68908
		0.06				75.9	6.000	0.061	0.130	0.200	---	64.90			29.34*			36.40*	1967	68908
		0.06				75.9	6.000	0.061	0.130	0.200	---	64.90			29.34*			36.40*	1967	68908
		0.06				75.9	6.000	0.061	0.130	0.200	---	64.90			29.34*			36.40*	1967	68908
		0.06				75.9	6.000	0.061	0.130	0.200	---	64.90			29.34*			36.40*	1967	68908

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.1.2.2 (CONTINUED)

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ALUMINUM 2014 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{max} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES RESTRAINED																				
T6 Cont'd	Sheet Cont'd	0.06	-320 Cont'd	T-L Cont'd	75.9	6.000	0.061	2.000	2.540	--	22.30	42.47	Cont'd	Cont'd	50.21	Cont'd	Cont'd	3.9	1967	68908
		0.06			75.9	6.000	0.061	2.000	2.650	--	22.90	43.62			51.72				1967	68908
		0.06			75.9	6.000	0.061	2.000	2.680	--	23.10	44.00			52.64				1967	68908
		0.06			75.9	6.000	0.061	0.250	0.400	--	56.80	35.53			45.16*				1967	68908
		0.06			75.9	12.000	0.058	0.500	0.690	--	43.40	38.50	41.4	4.7	45.28				1967	68908
		0.06			75.9	12.000	0.058	0.500	0.690	--	44.50	39.48			46.42				1967	68908
		0.06			75.9	12.000	0.058	0.500	0.910	--	43.50	38.59			52.19				1967	68908
		0.06			75.9	12.000	0.059	0.130	0.240	--	65.20	29.47*			40.04*				1967	68908
		0.06			75.9	12.000	0.059	0.260	0.400	--	57.50	36.76			45.61				1967	68908
		0.06			75.9	12.010	0.059	0.260	0.440	--	53.90	33.79			44.85				1967	68908
T6	Sheet	0.06	-320	T-L	75.9	12.000	0.060	1.000	1.530	--	35.30	44.43	41.4	4.7	55.28	49.7	3.9		1967	68908
		0.06			75.9	12.000	0.060	4.000	4.920	--	16.70	44.98			51.92				1967	68908
		0.06			75.9	12.000	0.060	4.000	4.800	--	15.90	42.83			48.54				1967	68908
		0.06			75.9	12.000	0.060	0.250	0.450	--	56.30	35.29			47.38				1967	68908
		0.06			75.9	12.000	0.060	0.130	0.250	--	66.20	29.92*			41.50*				1967	68908
		0.06			75.9	12.000	0.060	0.130	0.240	--	65.80	29.74*			40.41*				1967	68908
		0.06			75.9	12.000	0.060	4.000	4.650	--	17.00	45.79			50.72				1967	68908
		0.06			75.9	12.000	0.060	2.000	2.610	--	27.60	49.78			57.57				1967	68908
		0.06			75.9	12.000	0.061	4.000	4.760	--	17.30	46.50			52.49				1967	68908
		0.06			75.9	12.000	0.061	4.000	4.760	--	17.30	46.50			52.49				1967	68908

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.1.2.2 (CONTINUED)

ALUMINUM 2014 K _G																						
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _G			DATE	REFER			
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _y	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _G (Ksi√in)	K _G MEAN	STAN DEV					
BUCKLING OF CRACK EDGES RESTRAINED																						
T6 Cont'd	Sheet Cont'd	0.06	-320 Cont'd	T-L Cont'd	75.9	12.000	0.061	2.000	2.220	--	25.10	45.27	Cont'd	Cont'd	Cont'd	47.89	Cont'd	Cont'd	1967	68908		
		0.06			75.9	12.000	0.061	1.000	1.560	--	33.30	41.92									52.68	Cont'd
		0.06			75.9	12.000	0.061	1.000	1.610	--	29.10	36.63									46.80	
BUCKLING OF CRACK EDGES NOT RESTRAINED																						
T6	Sheet	0.12	R.T.	L-T	64.0	3.000	0.126	1.120	1.760	--	33.30	48.40*	---	---	---	71.21*	---	---	1973	86213		
		0.12			64.0	3.000	0.126	1.090	1.900	--	34.90	49.78*				81.70*						
T6	Plate	0.25	R.T.	L-T	65.0	3.000	0.247	1.100	1.720	--	31.60	45.36	45.2	0.2	---	65.90*	---	---	1973	86213		
		0.25			65.0	3.000	0.247	1.220	1.810	--	29.20	45.11				64.45*						
T6	Sheet	0.06	-423	T-L	81.8	4.000	0.063	1.230	1.370	--	36.00	53.17	53.1	1.8	---	56.99	59.1	3.5	1963	51527		
		0.06			81.8	4.000	0.063	1.210	1.560	--	36.30	53.07				62.53						
		0.06			81.8	4.000	0.063	1.230	1.250	--	37.80	55.83				56.40						
		0.06			81.8	4.000	0.063	1.230	1.450	--	34.30	50.66				56.41						
		0.06			81.8	4.000	0.064	1.230	1.620	--	35.60	52.58				63.32						
		0.06			69.3	4.000	0.062	1.230	---	--	35.30	52.14				---						
T6	Sheet	0.06	-320	T-L	69.3	4.000	0.063	1.230	---	--	30.30	44.75	51.6	3.9	---	---	---	---	1963	51527		
		0.06			69.3	4.000	0.063	1.230	---	--	35.90	53.03				67.40*						
		0.06			69.3	4.000	0.063	1.240	1.800	--	36.30	53.89				70.00*						
		0.06			69.3	4.000	0.063	1.230	1.860	--	36.70	54.21				72.68*						

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.1.2.2 (CONTINUED)

ALUMINUM 2014 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T6	Sheet	0.06	R.T.	T-L	64.3	2.000	0.064	0.625	0.930	---	36.30	38.26*	37.3	0.4	50.83*	---	---	---	1973	86213
		0.06			64.3	2.000	0.064	0.625	0.910	---	36.20	38.16*			49.80*				1973	86213
		0.06			65.6	2.000	0.064	0.621	0.820	---	37.00	38.84*			46.96*				1973	86213
		0.06			64.3	2.000	0.065	0.624	0.790	---	36.90	38.89*			45.57*				1973	86213
		0.06			64.3	2.000	0.065	0.623	0.850	---	37.60	39.55*			49.03*				1973	86213
		0.06			64.3	2.000	0.065	0.623	0.900	---	37.40	39.34*			50.99*				1973	86213
		0.06			65.6	2.000	0.065	0.623	0.830	---	37.50	39.45*			48.02*				1973	86213
		0.06			65.6	2.000	0.067	0.625	0.760	---	35.60	37.52			42.77*				1973	86213
		0.06			65.6	2.000	0.067	0.625	0.860	---	35.10	37.00			46.18*				1973	86213
		0.12			62.2	3.000	0.126	1.130	1.620	---	29.40	42.99			57.67*				1973	86213
T6	Sheet	0.12	R.T.	T-L	62.2	3.000	0.126	1.110	1.580	---	29.50	42.61	42.8	0.3	56.49*	---	---	---	1973	86213
		0.06			63.2	3.970	0.063	1.230	1.620	---	34.20	50.56	60.94*	1963	51527					
T6	Sheet	0.06	R.T.	T-L	63.2	3.970	0.063	1.240	1.480	---	33.60	49.93	49.0	2.0	56.12*	---	---	---	1963	51527
		0.06			63.2	3.970	0.063	1.240	1.650	---	32.80	48.74			59.25*				1963	51527
		0.06			63.2	3.980	0.063	1.230	1.680	---	33.80	49.96			61.86*				1963	51527
		0.06			63.2	3.980	0.063	1.240	1.650	---	30.70	46.61			55.42*				1963	51527
		0.06			65.4	15.810	0.063	3.000	3.550	---	24.10	53.51			58.75				1973	86213
T6	Sheet	0.06	R.T.	T-L	65.4	15.810	0.064	4.000	4.830	---	20.40	53.25	51.2	2.2	59.66	58.4	2.7	---	1973	86213
		0.06			65.4	15.820	0.064	1.020	1.620	---	38.40	48.73	61.66	1973	86213					
		0.06																		

* NOTE: NET SECTION STRESS EXCEEDS 90% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.1.2.2 (CONCLUDED)

ALUMINUM 2014 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _e	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T6 Cont'd	Sheet Cont'd	0.06	R.T. Cont'd	T-L Cont'd	65.4	15.820	0.064	6.010	6.860	---	14.60	49.32	Cont'd	Cont'd	54.38	Cont'd	Cont'd	1973	86213	
		0.06	---		65.4	15.830	0.064	6.000	7.000	---	15.20	51.28			57.50					
T6	Plate	0.25	R.T.	T-L	62.8	3.000	0.247	1.130	1.590	---	24.60	35.97	35.9	0.2	47.39*	---	---	1973	86213	
		0.25			---	62.8	3.000	0.247	1.160	1.640	---	24.00			35.75					47.65*
T651	Plate	0.25	R.T.	L-T	62.2	4.000	0.248	1.400	2.310	---	32.00	51.39	51.7	0.6	77.66*	---	---	1973	86213	
		0.25			---	62.2	4.000	0.249	1.330	2.120	---	32.80			50.92					72.96*
		0.25			---	64.3	4.000	0.251	1.330	2.260	---	33.90			52.63					80.38*
		0.25			---	64.3	4.000	0.252	1.400	2.380	---	32.10			51.55					80.52*
		0.25			---	64.3	4.000	0.252	1.330	2.140	---	33.50			52.01					76.20*
		1.00			R.T.	66.4	20.000	1.000	6.950	9.950	---	14.50			51.82					68.04
T651	Plate	0.25	R.T.	T-L	60.7	4.000	0.250	1.420	2.110	---	26.20	42.48	42.2	0.3	58.02*	---	---	1973	86213	
		0.25			---	60.7	4.000	0.250	1.330	1.960	---	27.20			42.23					56.32*
		0.25			---	62.2	4.000	0.252	1.330	1.840	---	27.10			42.07					53.20*
		0.25			---	62.2	4.000	0.252	1.410	2.140	---	25.90			41.79					58.14*
T651	Plate	0.25	R.T.	T-L	62.2	4.000	0.252	1.330	1.900	---	27.20	42.23	---	---	54.84*	---	---	1973	86213	
		1.00			R.T.	65.8	20.000	1.000	6.940	9.370	---	9.10			32.49					40.55

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

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R

2014

Condition/Ht: T6

Form: 0.06 in. Sheet

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 2 Hz

Environment: LAB AIR; RT

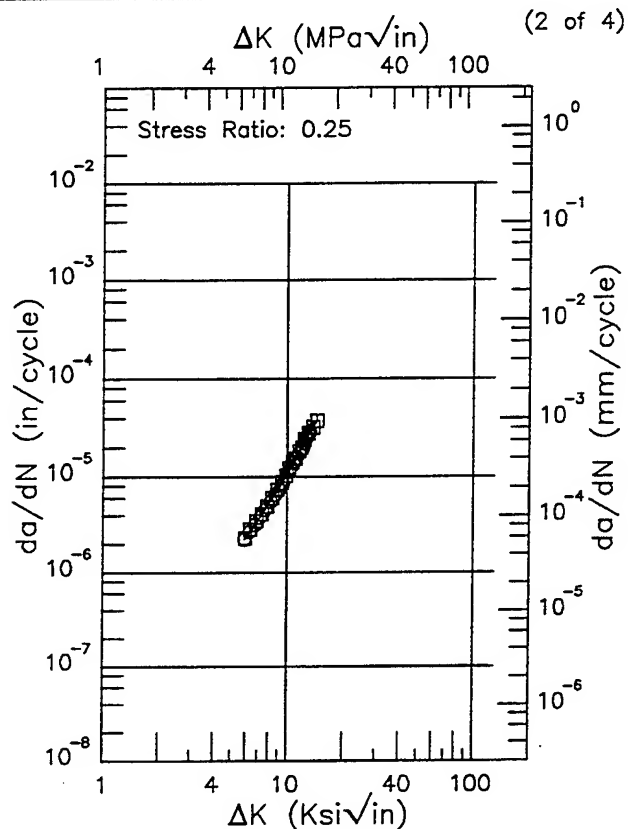
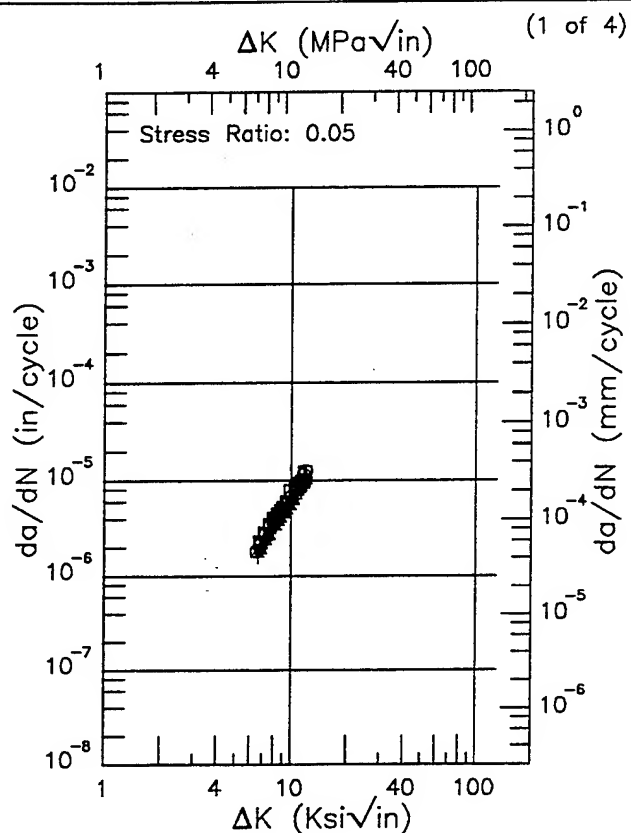
Yield Strength: 67 ksi

Ult. Strength: 74 ksi

Specimen Thk: 0.063 - 0.064 in.

Specimen Width: 6 in.

Ref: 86734



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
6.54 (min)	1.62
7.	2.21
8.	3.51
9.	4.83
10.	6.39
11.98 (max)	12.0

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
5.88 (min)	2.21
6.	2.34
7.	3.59
8.	5.21
9.	7.39
10.	10.4
13.	26.6
14.47 (max)	37.4

RMS %
Error

7.71

Life Prediction Ratio Summary

+Δ□

0. .5 .8 1.25 2. ---

RMS %
Error

2.71

Life Prediction Ratio Summary

□

0. .5 .8 1.25 2. ---

Figure 7.1.3.1.1

Condition/Ht: T6
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 2 Hz
 Environment: LAB AIR; RT

Yield Strength: 67 ksi
 Ult. Strength: 74 ksi
 Specimen Thk: 0.063 - 0.064 in.
 Specimen Width: 6 in.
 Ref: 86734

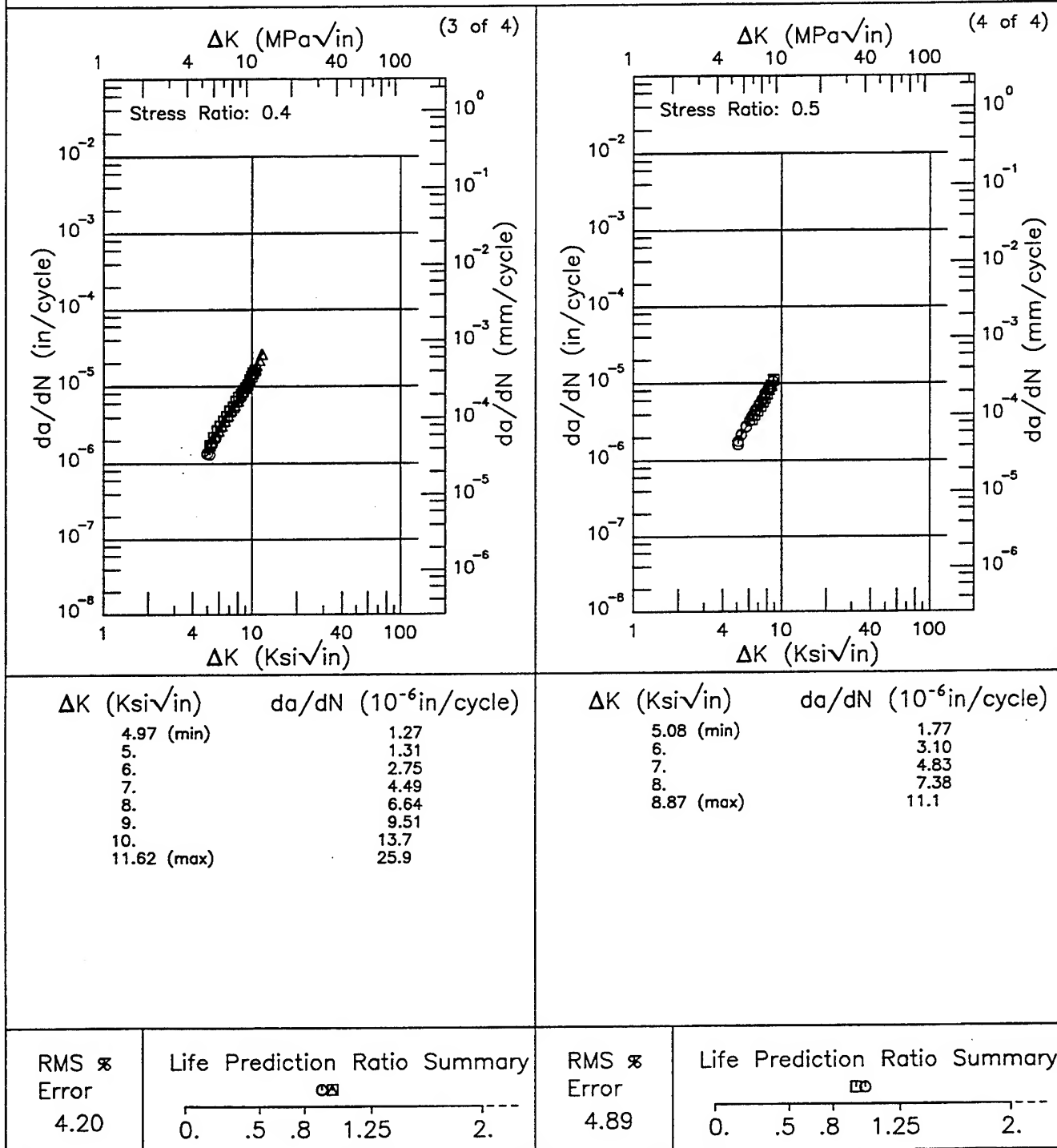


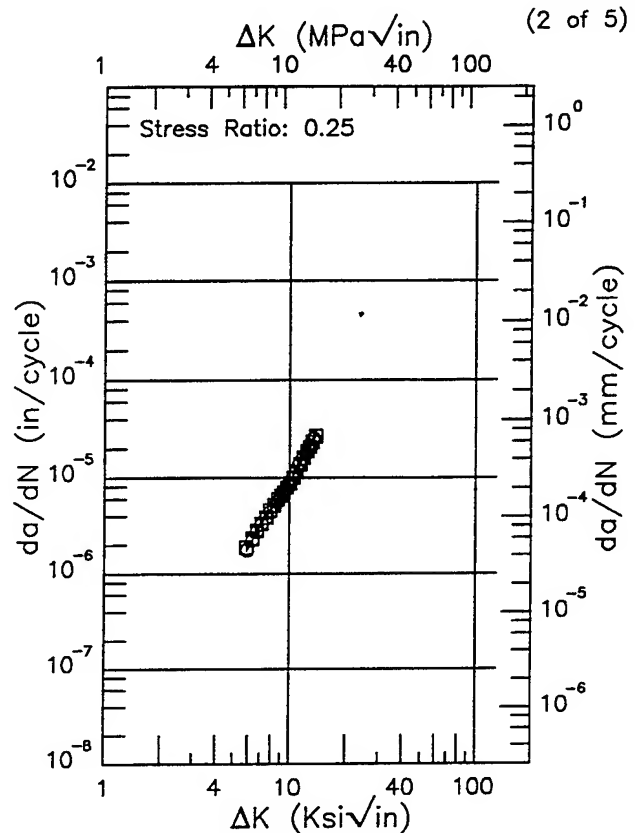
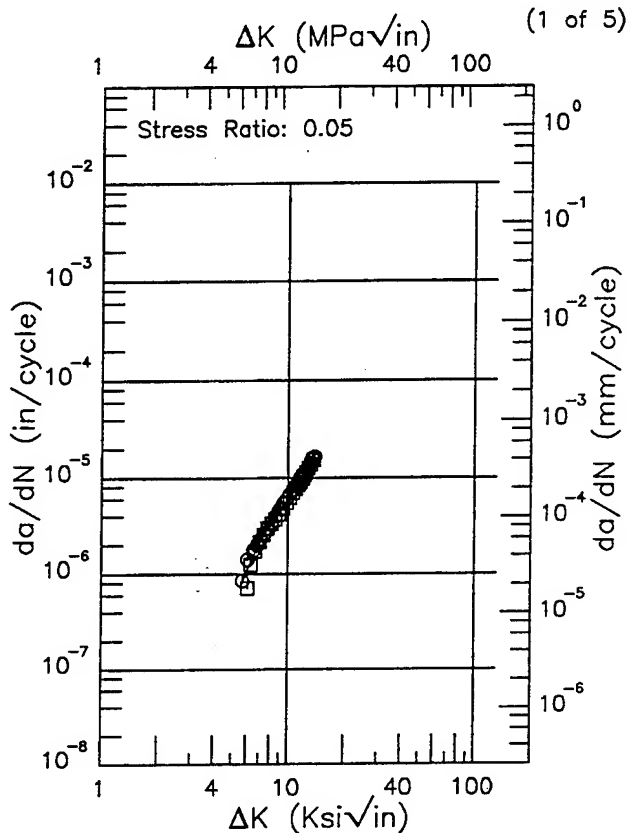
Figure 7.1.3.1.1 (Concluded)

R

2014

Condition/Ht: T6
 Form: 0.04 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 2 Hz
 Environment: LAB AIR; RT

Yield Strength: 67 ksi
 Ult. Strength: 74 ksi
 Specimen Thk: 0.04 in.
 Specimen Width: 6 in.
 Ref: 86734



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.69 (min)	0.791
6.	1.06
7.	2.07
8.	3.20
9.	4.51
10.	6.12
13.	13.5
13.77 (max)	16.2

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.86 (min)	1.72
6.	1.88
7.	3.15
8.	4.59
9.	6.35
10.	8.73
13.	21.8
13.71 (max)	26.0

RMS %
 Error
 8.10

Life Prediction Ratio Summary

□ ○

0. .5 .8 1.25 2.

RMS %
 Error
 2.23

Life Prediction Ratio Summary

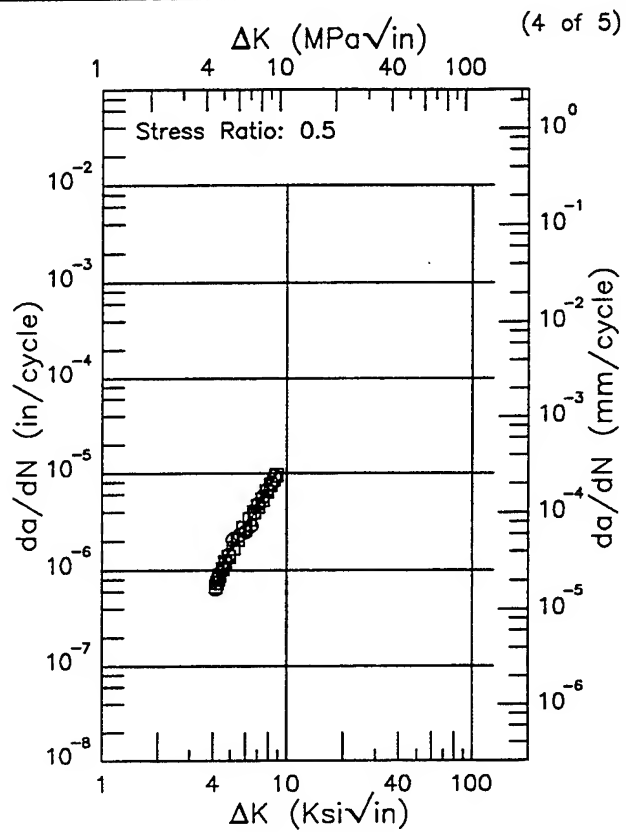
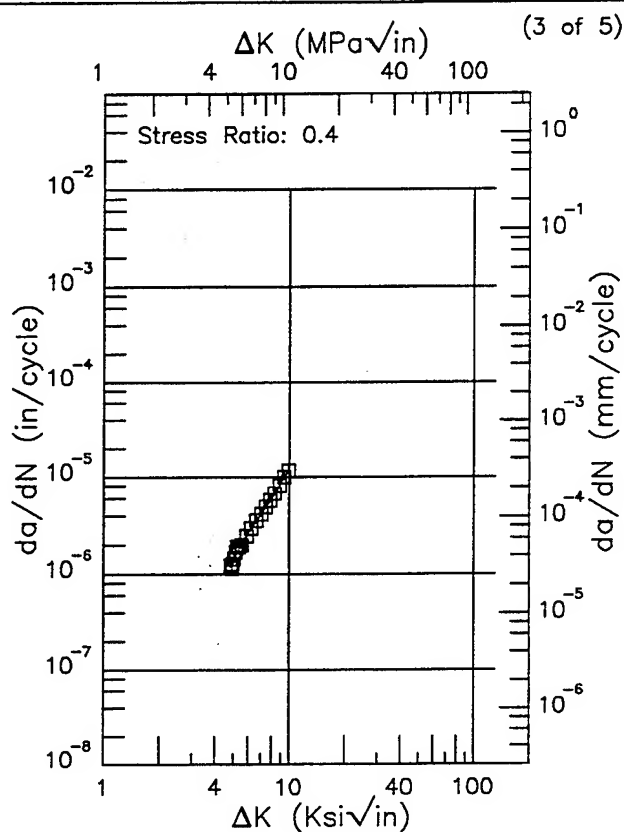
□

0. .5 .8 1.25 2.

Figure 7.1.3.1.2

Condition/Ht: T6
 Form: 0.04 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 2 Hz
 Environment: LAB AIR; RT

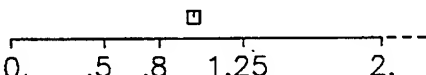
Yield Strength: 67 ksi
 Ult. Strength: 74 ksi
 Specimen Thk: 0.04 in.
 Specimen Width: 6 in.
 Ref: 86734



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.82 (min)	1.19
5.	1.41
6.	2.68
7.	4.09
8.	6.01
9.	8.68
9.85 (max)	11.5

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.13 (min)	0.683
5.	1.60
6.	2.68
7.	4.43
8.	7.04
8.79 (max)	9.81

RMS %
 Error
 5.11

Life Prediction Ratio Summary


RMS %
 Error
 5.17

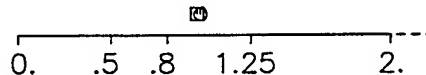
Life Prediction Ratio Summary


Figure 7.1.3.1.2 (Continued)

R

2014

Condition/Ht: T6
 Form: 0.04 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 2 Hz
 Environment: LAB AIR; RT

Yield Strength: 67 ksi
 Ult. Strength: 74 ksi
 Specimen Thk: 0.04 in.
 Specimen Width: 6 in.
 Ref: 86734

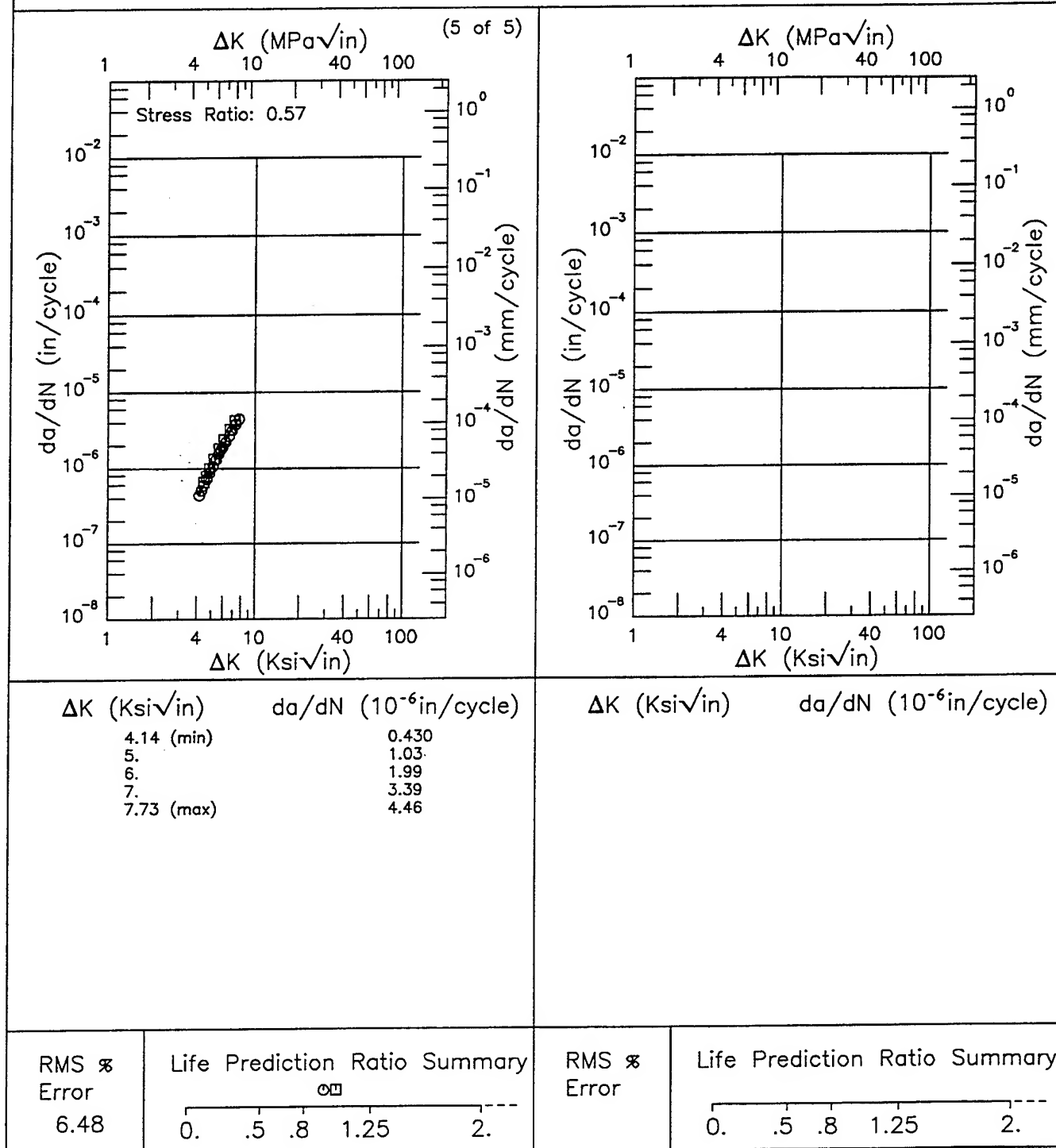


Figure 7.1.3.1.2 (Concluded)

Condition/Ht: T6
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 2 Hz
 Environment: LAB AIR; RT

Yield Strength: 67 ksi
 Ult. Strength: 74 ksi
 Specimen Thk: 0.063 in.
 Specimen Width: 6 in.
 Ref: 86734

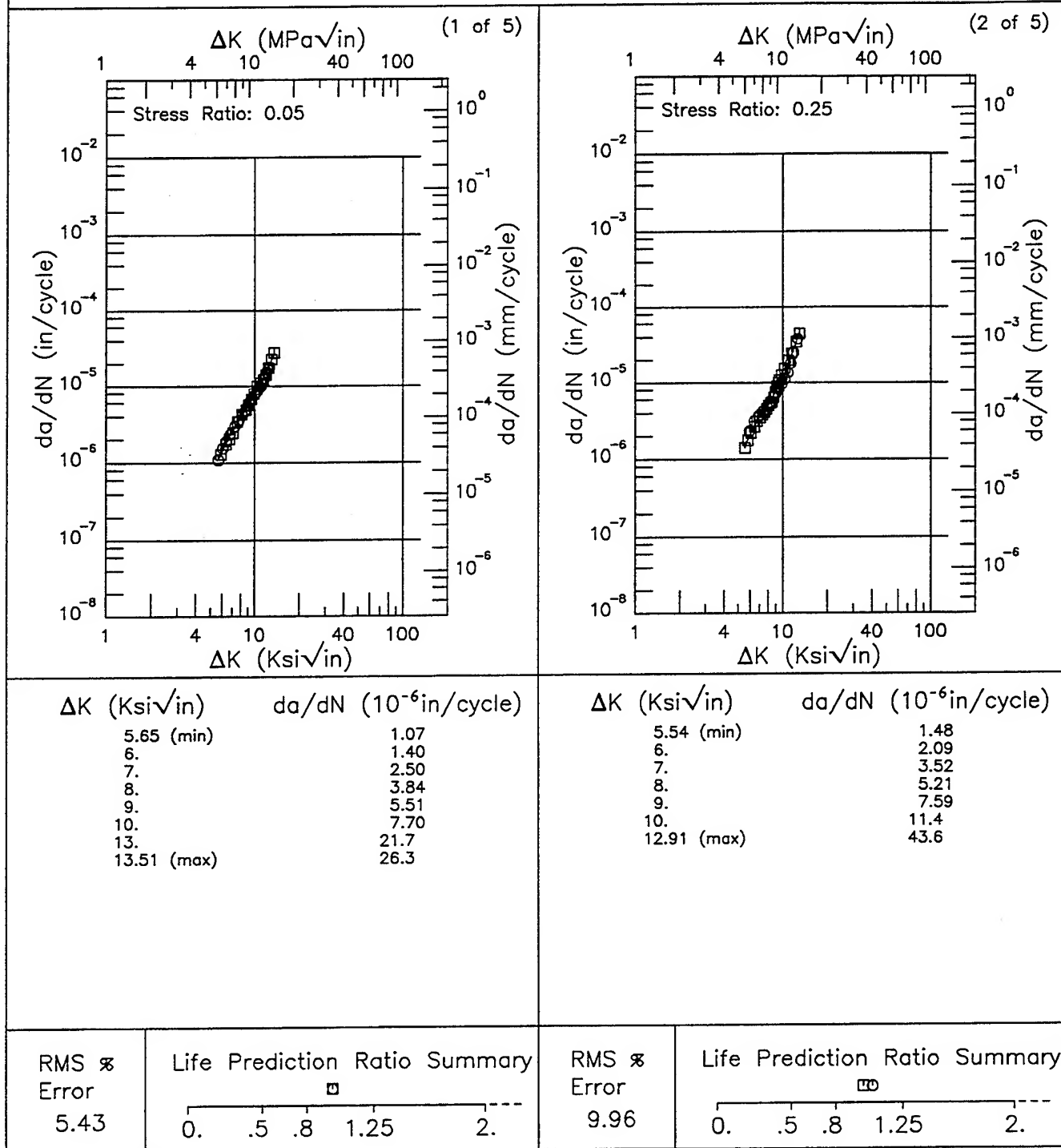


Figure 7.1.3.1.3

R

2014

Condition/Ht: T6
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 2 Hz
 Environment: LAB AIR; RT

Yield Strength: 67 ksi
 Ult. Strength: 74 ksi
 Specimen Thk: 0.063 in.
 Specimen Width: 6 in.
 Ref: 86734

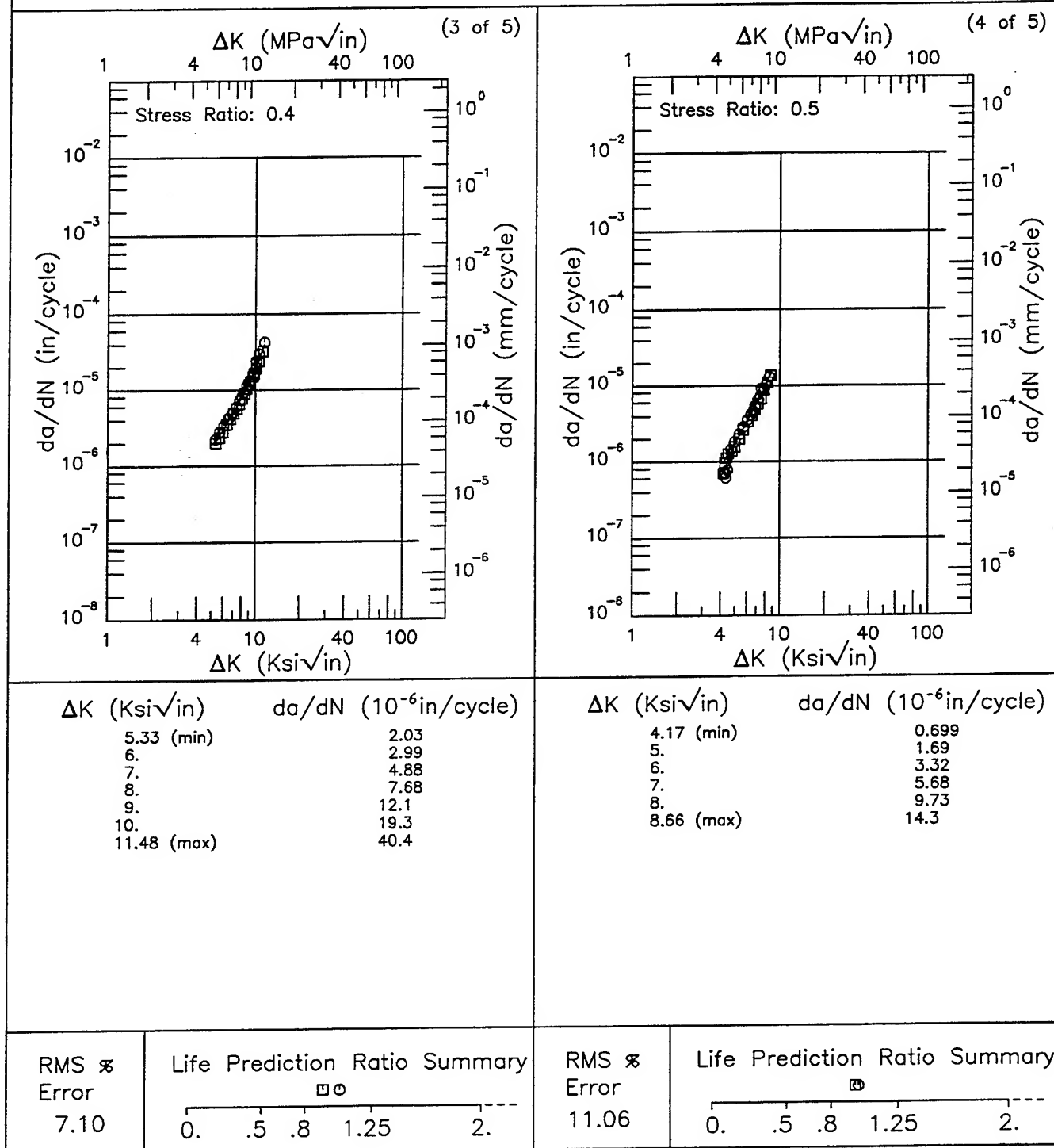


Figure 7.1.3.1.3 (Continued)

Condition/Ht: T6
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 2 Hz
 Environment: LAB AIR; RT

Yield Strength: 67 ksi
 Ult. Strength: 74 ksi
 Specimen Thk: 0.063 in.
 Specimen Width: 6 in.
 Ref: 86734

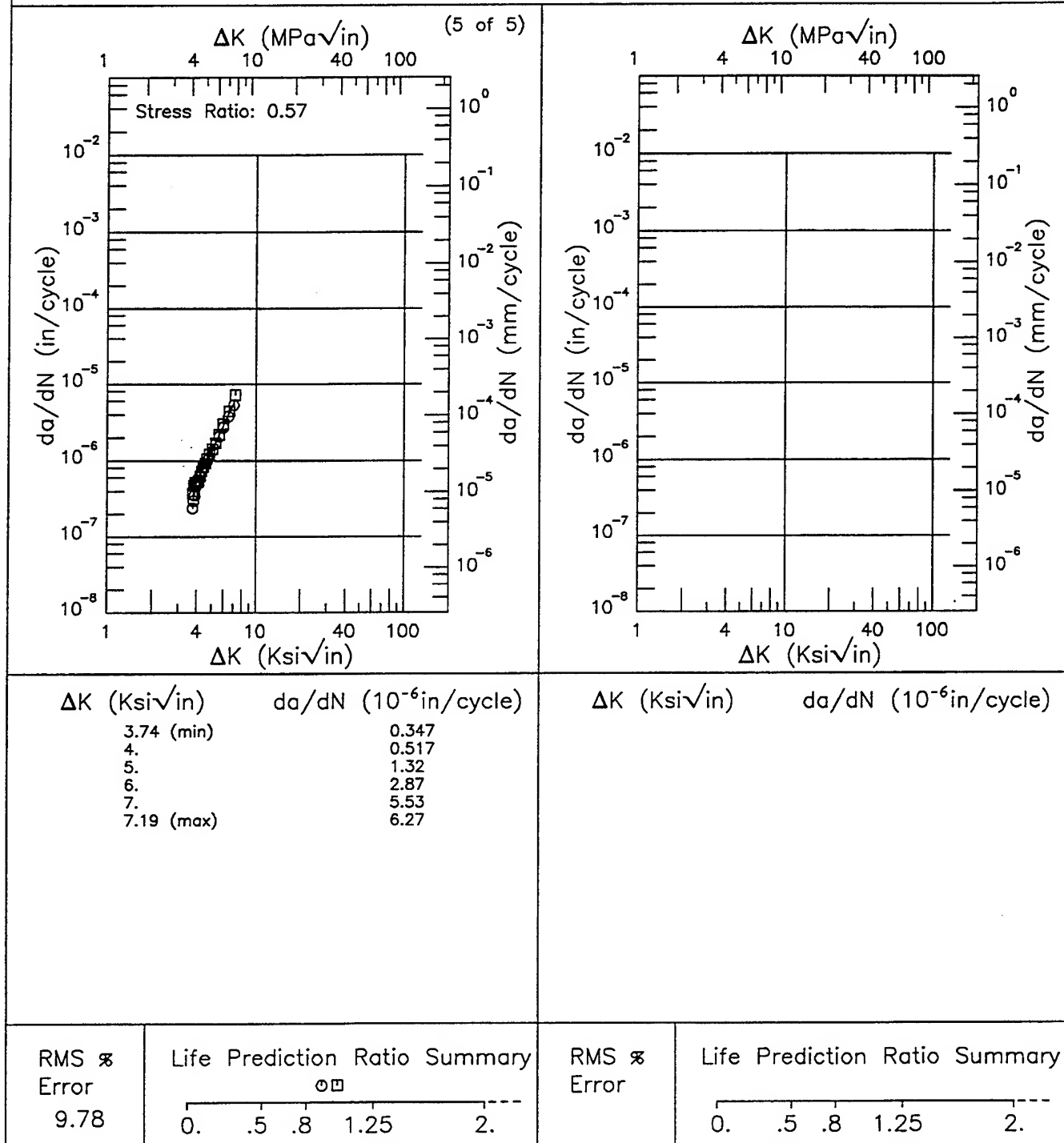


Figure 7.1.3.1.3 (Concluded)

R

2014

Condition/Ht: T6
 Form: 0.04 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 2 Hz
 Environment: LAB AIR; RT

Yield Strength: 67 ksi
 Ult. Strength: 74 ksi
 Specimen Thk: 0.04 in.
 Specimen Width: 6 in.
 Ref: 86734

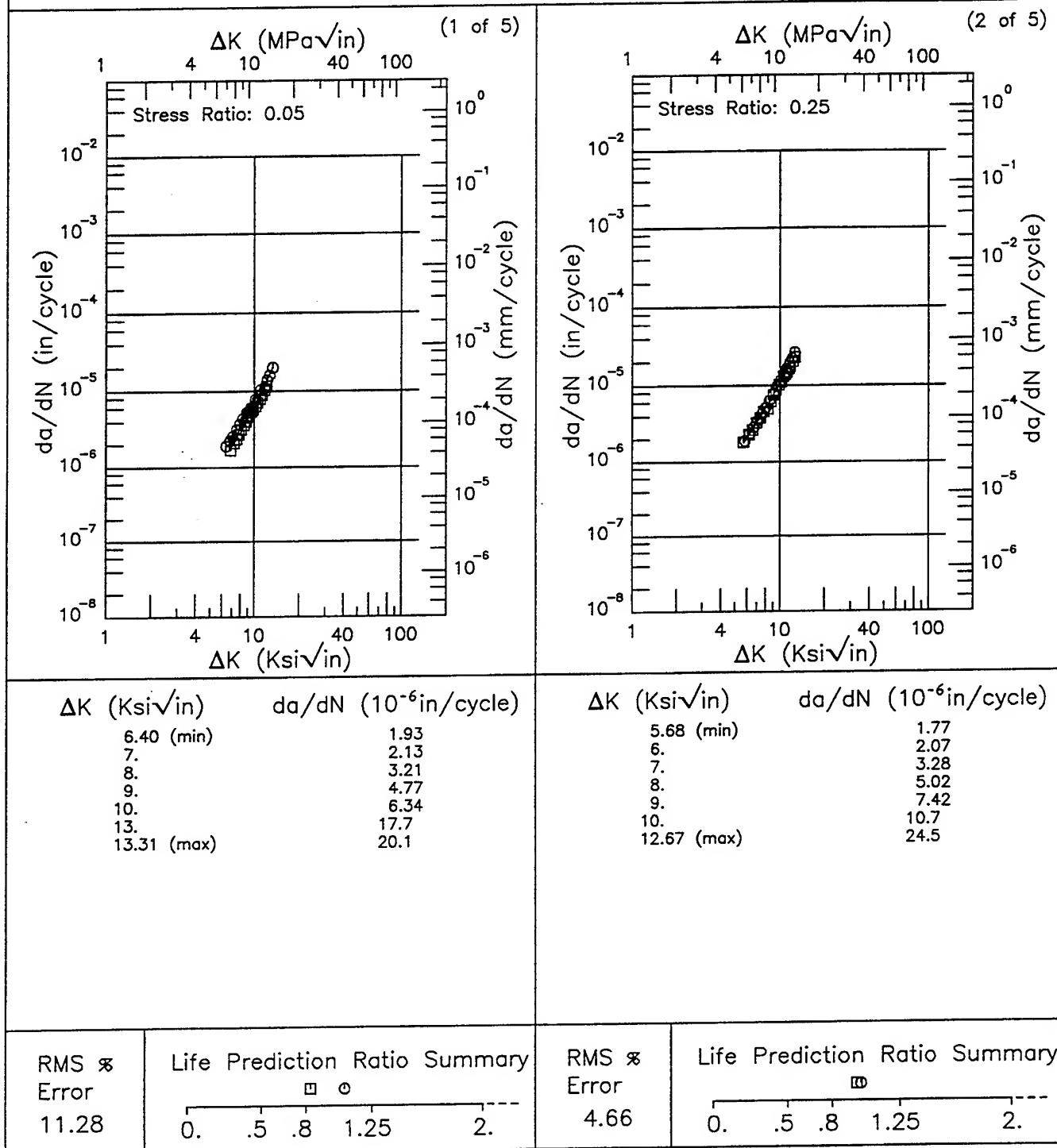
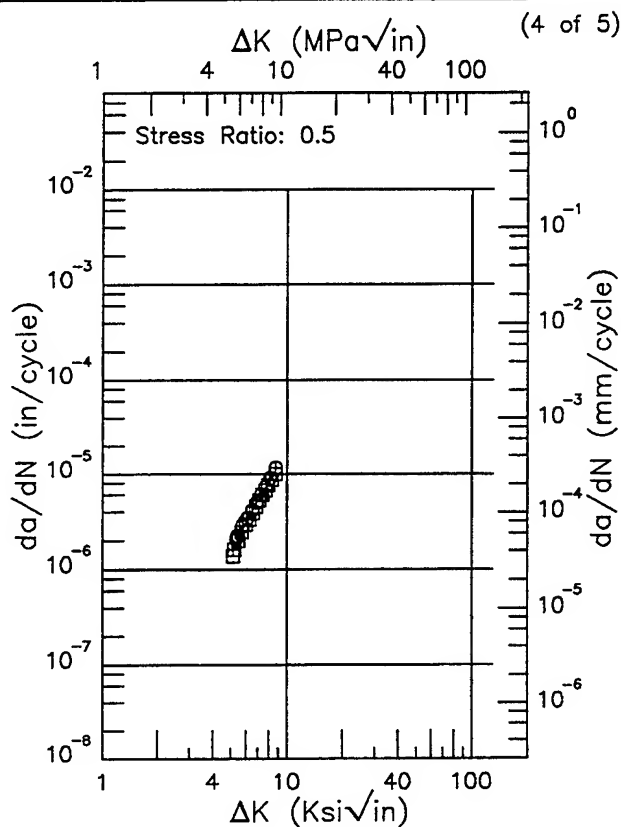
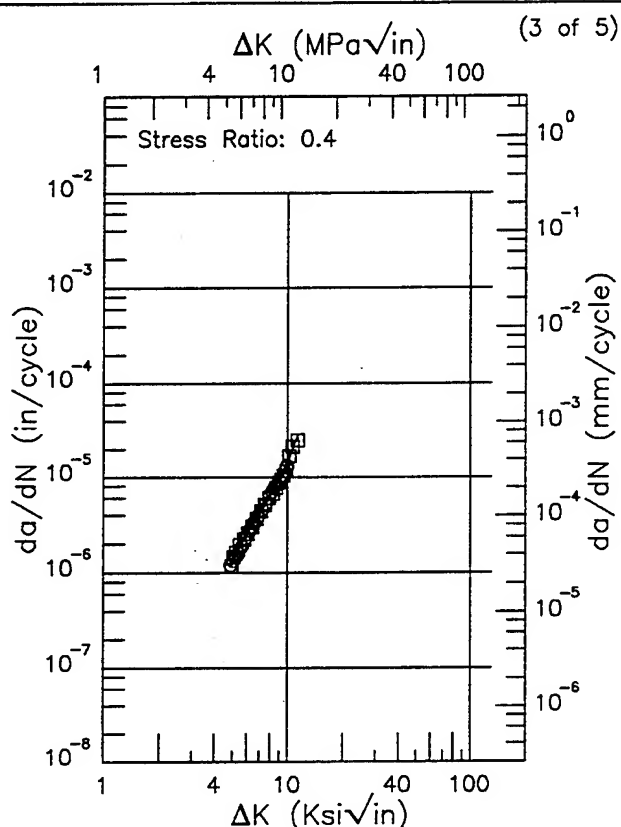


Figure 7.1.3.1.4

Condition/Ht: T6
 Form: 0.04 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 2 Hz
 Environment: LAB AIR; RT

Yield Strength: 67 ksi
 Ult. Strength: 74 ksi
 Specimen Thk: 0.04 in.
 Specimen Width: 6 in.
 Ref: 86734



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
4.88 (min)	1.16
5.	1.28
6.	2.45
7.	4.01
8.	6.13
9.	9.24
10.	14.3
11.25 (max)	26.7

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
5.13 (min)	1.60
6.	3.01
7.	5.13
8.	7.90
8.66 (max)	10.2

RMS \times
 Error
 4.74

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS \times
 Error
 6.95

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

Figure 7.1.3.1.4 (Continued)

R

2014

Condition/Ht: T6
 Form: 0.04 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 2 Hz
 Environment: LAB AIR; RT

Yield Strength: 67 ksi
 Ult. Strength: 74 ksi
 Specimen Thk: 0.04 in.
 Specimen Width: 6 in.
 Ref: 86734

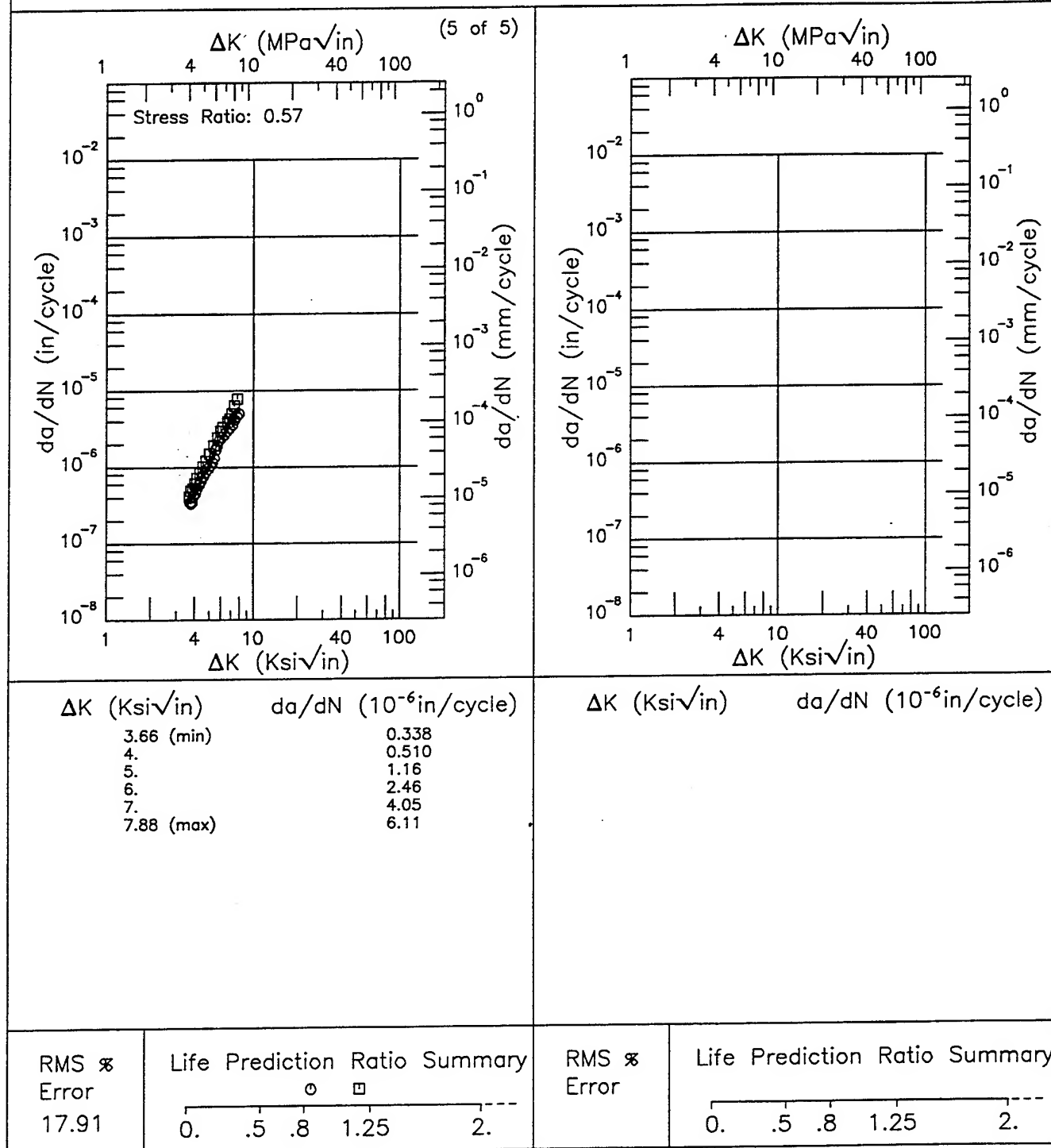


Figure 7.1.3.1.4 (Concluded)

Condition/Ht: T6
 Form: 5 in. Forging
 Specimen Type: CT
 Orientation: T-L
 Frequency: 9 Hz
 Environment: LAB AIR; RT

Yield Strength: 64.1 ksi
 Ult. Strength: 68.2 ksi
 Specimen Thk: 0.4 in.
 Specimen Width: 4 in.
 Ref: BW001

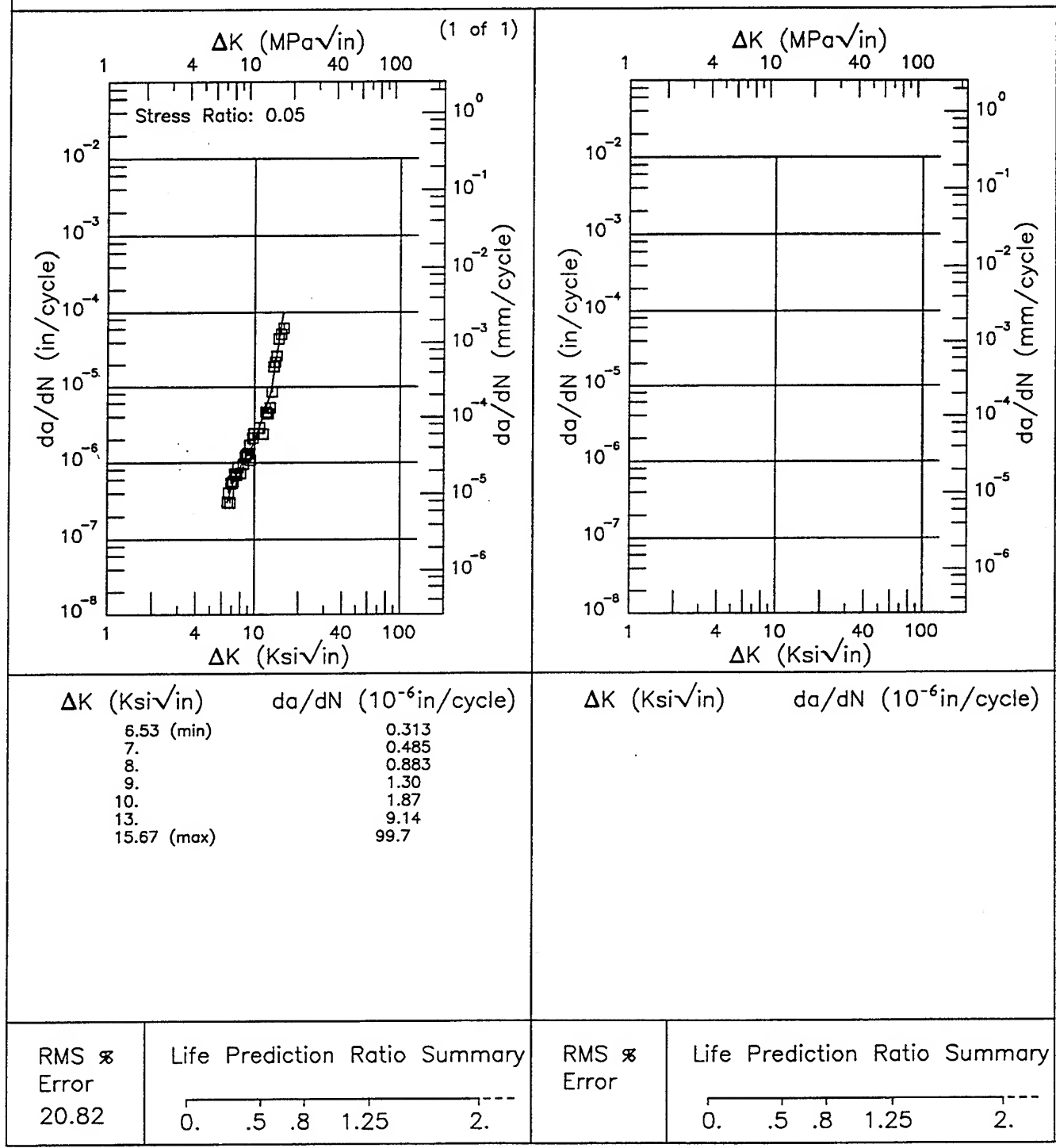


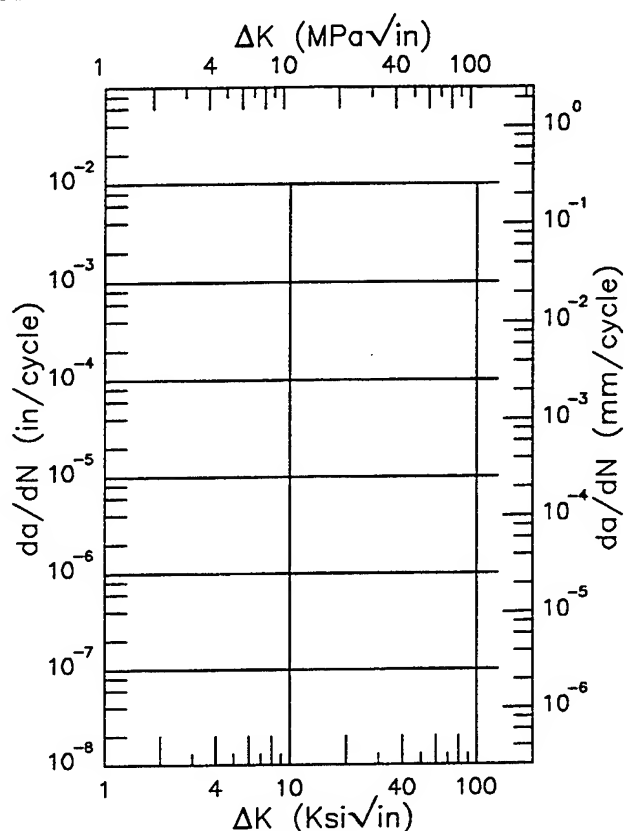
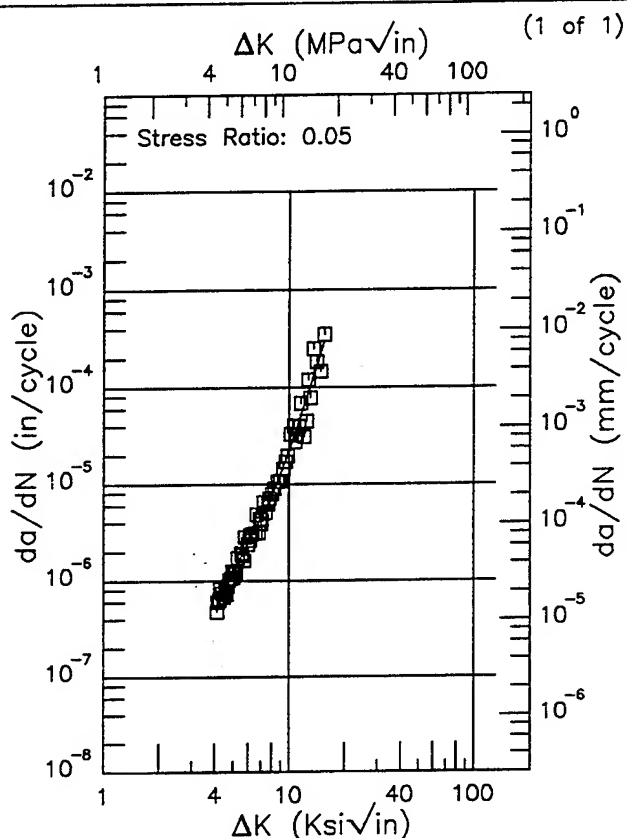
Figure 7.1.3.1.5

R

2014

Condition/Ht: T6
Form: 5 in. Forging
Specimen Type: CT
Orientation: T-L
Frequency: 9 Hz
Environment: H.H.A.; RT

Yield Strength: 64.1 ksi
Ult. Strength: 68.2 ksi
Specimen Thk: 0.4 in.
Specimen Width: 2 in.
Ref: BW001



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.08 (min)	0.529
5.	1.21
6.	2.43
7.	4.40
8.	7.63
9.	13.0
10.	21.9
13.	99.4
15.39 (max)	294.

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

RMS %
Error
22.51

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.1.3.1.6

Condition/Ht: T6
Form: 5 in. Forging
Specimen Type: CCP (max stress specified)
Orientation: L-T
Frequency: 9 Hz
Environment: H.H.A.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.4 in.
Specimen Width: 2 in.
Ref: BW001

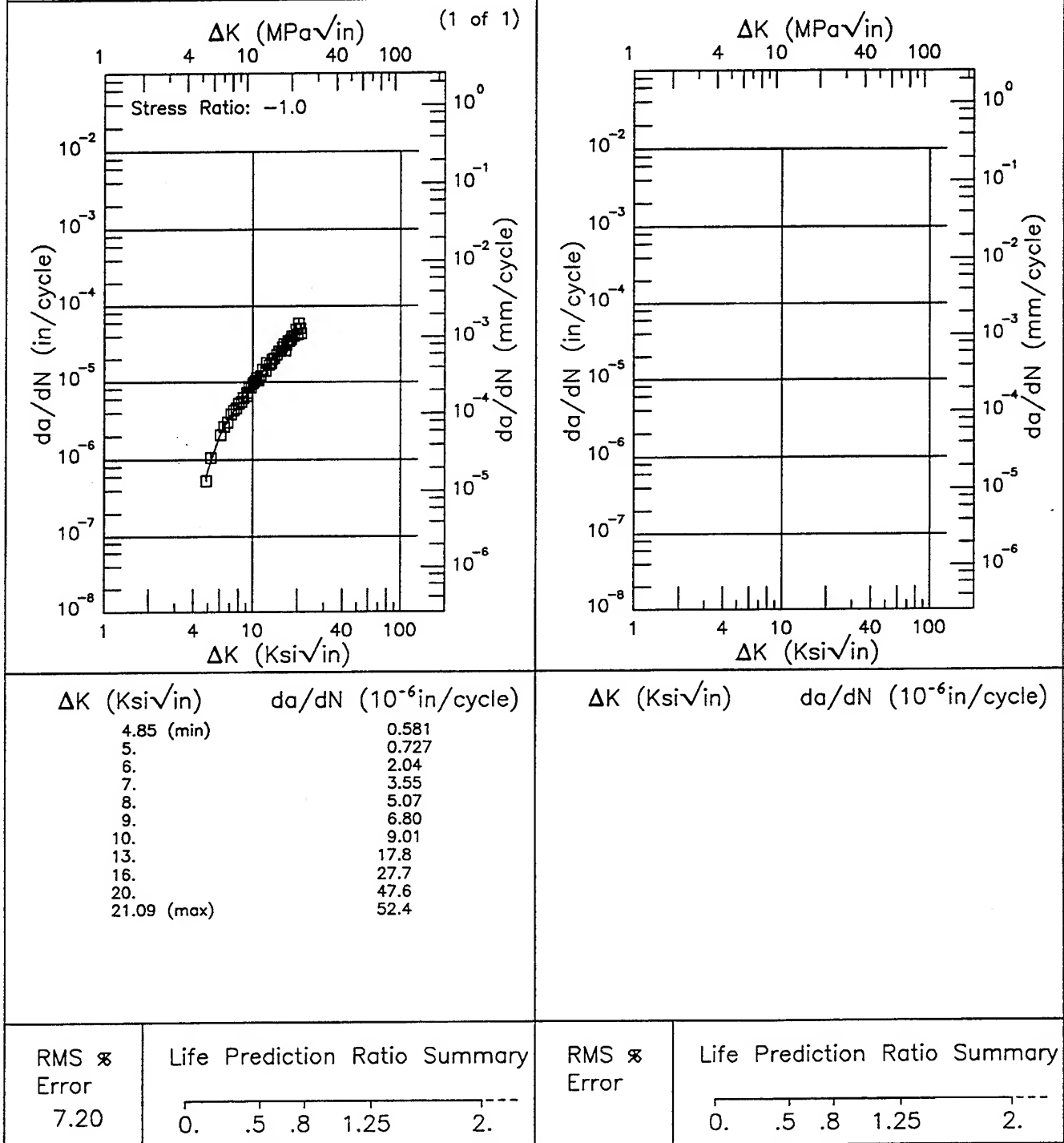


Figure 7.1.3.1.7

R

2014

Condition/Ht: T6
 Form: 5 in. Forging
 Specimen Type: CCP (max stress specified)
 Orientation: T-L
 Frequency: 9 Hz
 Environment: H.H.A.; RT

Yield Strength: 64.1 ksi
 Ult. Strength: 68.2 ksi
 Specimen Thk: 0.4 in.
 Specimen Width: 4 in.
 Ref: BW001

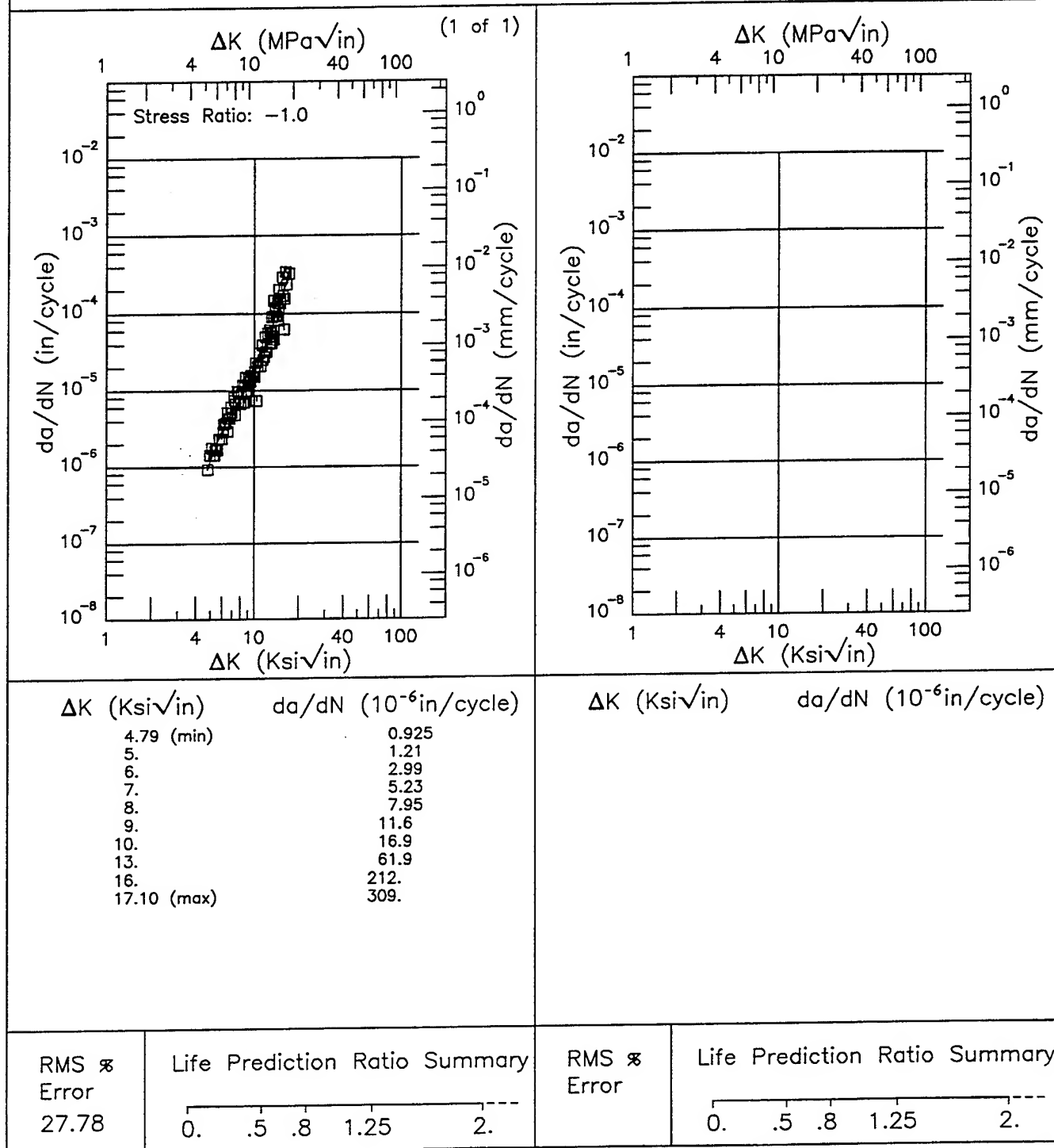


Figure 7.1.3.1.8

Condition/Ht: T6

Form: 1 in. Rolled Bar

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 5.2 Hz

Environment: LAB AIR; RT

Yield Strength: 60.2 – 60.5 ksi

Ult. Strength: 66 – 67.3 ksi

Specimen Thk: 0.253 – 0.26 in.

Specimen Width: 7.5 – 7.517 in.

Ref: 86213

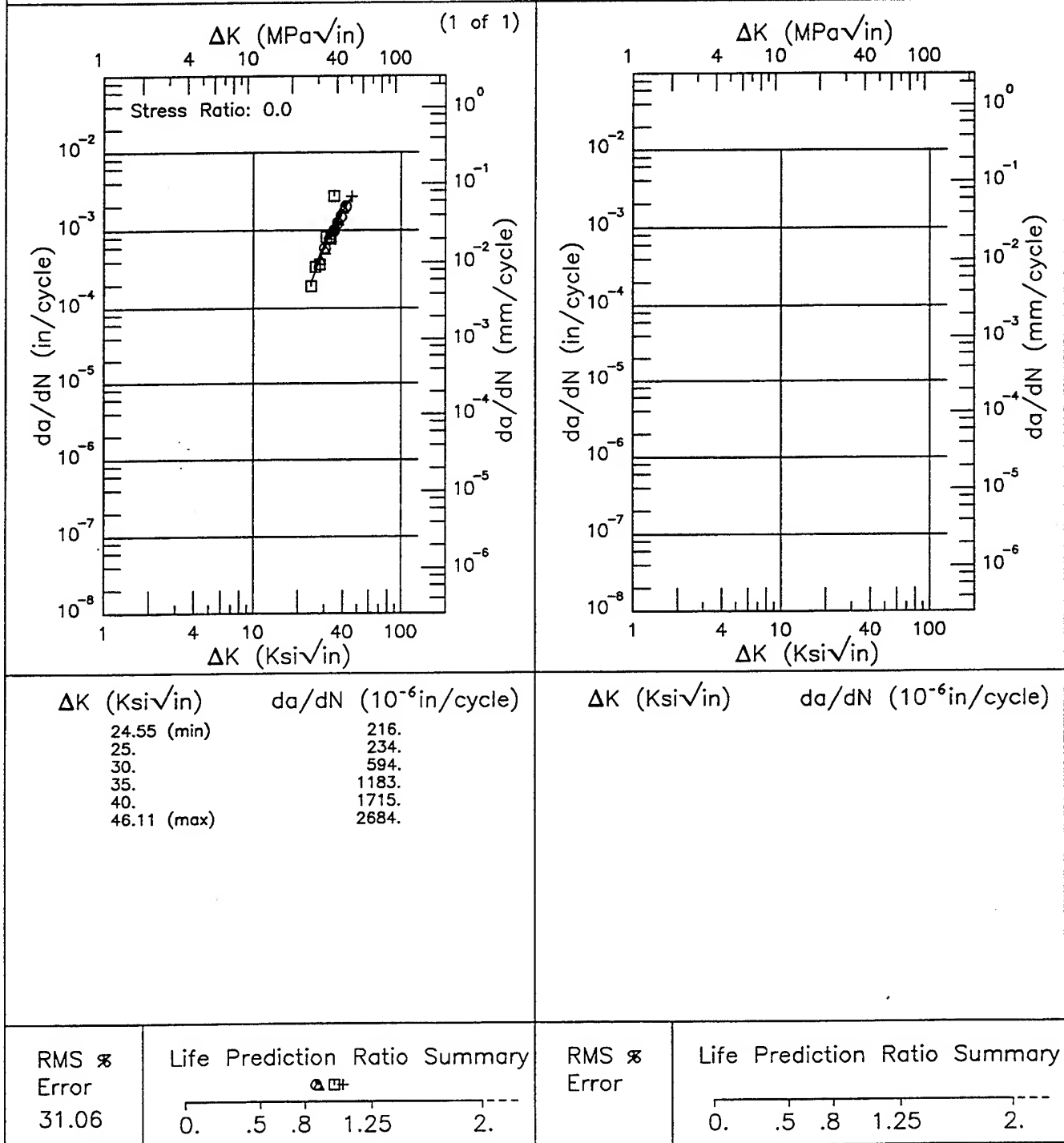
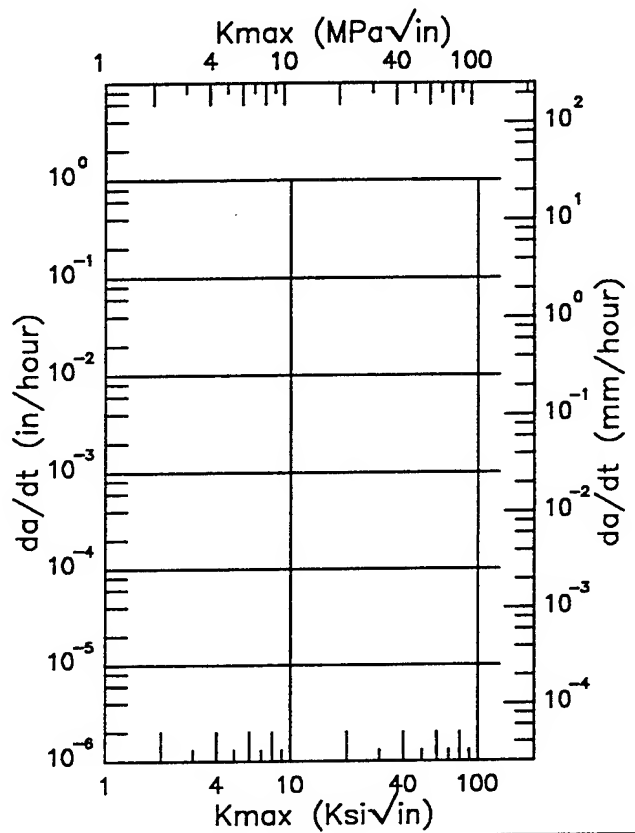
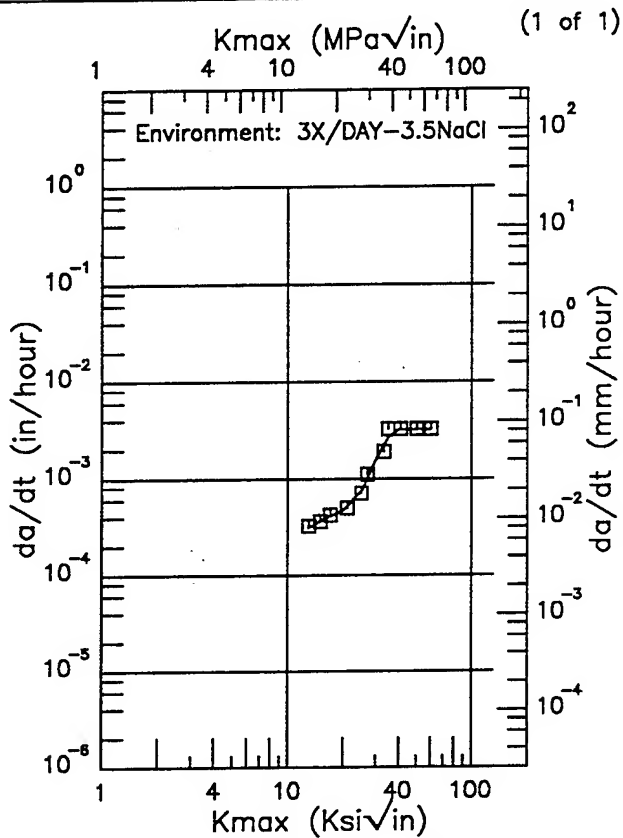


Figure 7.1.3.1.9

2014

Condition/Ht: T451
 Form: 1.5 in. Plate
 Specimen Type: DCB
 Orientation: S-L
 Yield Strength:
 Ult. Strength:

Specimen Thk: 1 in.
 Specimen Width: 5 in.
 A₀:
 K_Isec:
 Ref: 78313



Kmax (Ksi√in)	da/dt (10 ⁻³ in/hour)
13.00 (min)	0.314
16.	0.392
20.	0.468
25.	0.752
30.	1.56
35.	2.68
40.	3.23
50.	3.20
60.00 (max)	3.20

Kmax (Ksi√in) da/dt (10⁻³in/hour)

RMS %
 Error
 7.78

RMS %
 Error

Figure 7.1.3.2.1

Condition/Ht: T651
Form: 2 in. Plate
Specimen Type: DCB
Orientation: S-L
Yield Strength:
Ult. Strength:

Specimen Thk: 1 in.
Specimen Width: 5 in.
Ao:
K_I_{sec}:
Ref: 78313

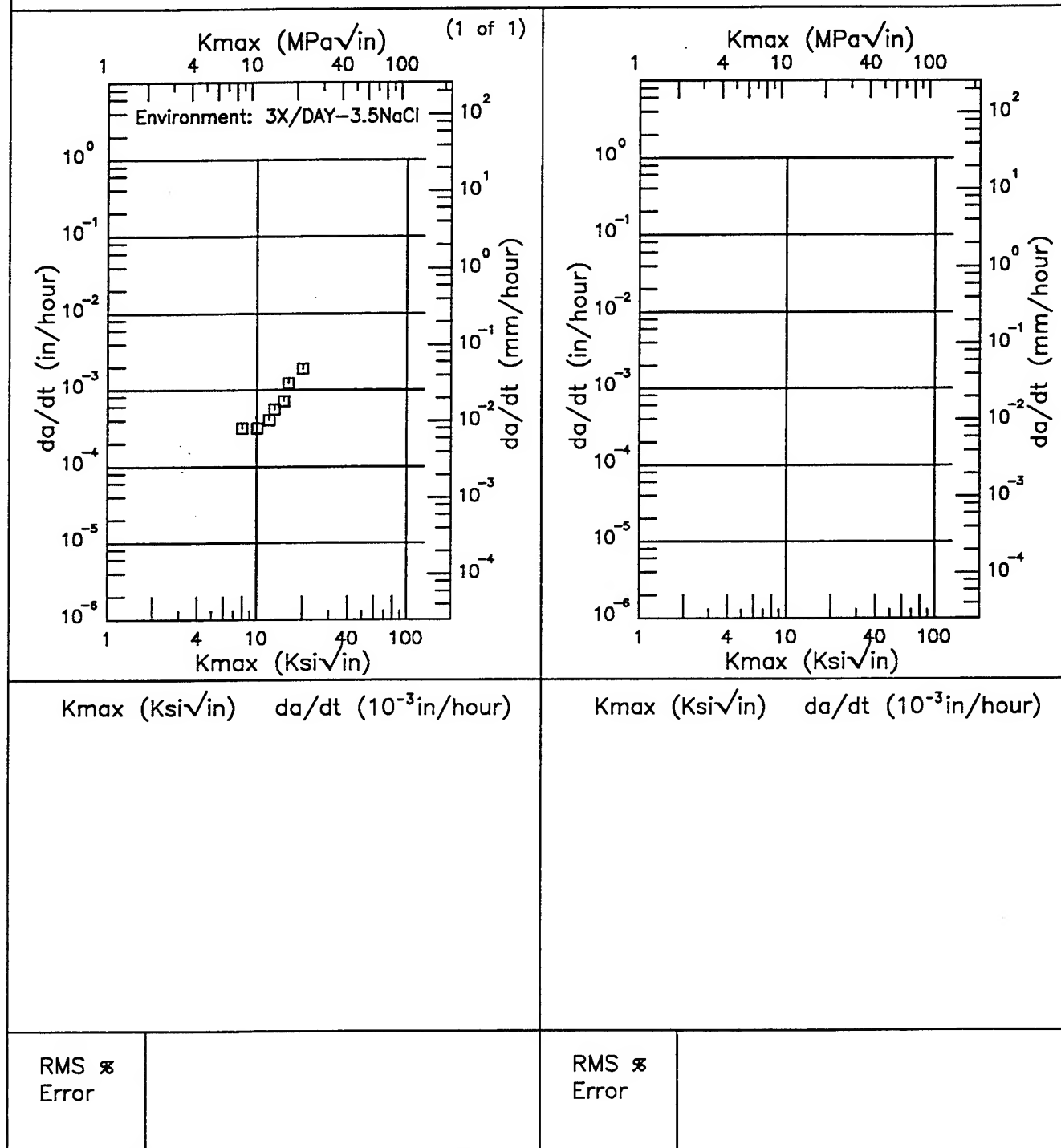


Figure 7.1.3.2.2

TABLE 7.1.3.3

K_{Iscc} SUMMARY FOR ALUMINUM ALLOY 2014

Condition/ Heat Treat	Prod Form	Test Temp (°F)	Spec Or.	Yield Str (Ksi)	Envir.	Specimen			Crack (in)	K _q (Ksi/in)	K _{Iscc} (Ksi/in)	Test Time (min)	Test Date	Refer
						Design	Width (in)	Thick (in)						
T6	F	R.T.	S-L	61	S.S.W.	CANT	2	1	8	19	16	---	1972	82675
T651	P	R.T.	S-L	59.6	Industrial Atm	CT	2	1	2.5	18.7	7	---	1973	86688
					Salt Dichromate- Acetate	CT	2	1	2.5	18.7	7	---	1973	86688
					Seacoast Atm	CT	2	1	2.5	18.7	7	---	1973	86688

TABLE 7.2.1.1

1 of 1

MEAN PLANE STRAIN FRACTURE TOUGHNESS
FOR ALUMINUM 2000/6000 SERIES ALLOY 2020 AT ROOM TEMPERATURE

Product Form	Condition/Heat Treatment	K_{Ic} (ksi \sqrt{in})									
		Specimen Orientation									
		L-T			T-L			S-L			
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	
Plate	T651	23	2.4	8	17.2	0.3	4	---	---	---	---

TABLE 7.2.1.2.1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2020 AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T6	SHEET	0.	13.3				103.95		
T851	PLATE	-0.5	5.2			3.4			
		0.	5.2			3.41			

TABLE 7.2.1.2.2

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2020 AT ROOM TEMPERATURE**

ORIENTATION: T-L

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level (Ksi \sqrt{in})				
				2.5	5.0	10.0	20.0	50.0
T651	PLATE	0.33	25		0.7	18.5		100.0

TABLE 7.2.2.1

ALUMINUM 2020 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ³ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi • √in.)	K _{1c} MEAN	STAN DEV		
T6	Plate	0.78	86	L-T	75.5	1.500	0.751	CT	0.745	0.18	20.50	20.1	0.3	1973	86213
		0.78			75.5	1.500	0.752	CT	0.728	0.17	19.90			1973	86213
		0.78			75.5	1.500	0.752	CT	0.697	0.18	20.00			1973	86213
T6	Extrusion	0.69	R.T.	L-T	75.5	1.500	0.652	NB	0.747	0.22	22.40	...	...	1973	86213
		1.37			76.3	3.000	1.376	NB	1.413	0.17	19.70	1973	86213		
T651	Plate	1.37	R.T.	L-T	77.0	3.000	1.355	NB	1.390	0.18	20.90	23.0	2.4	1973	86213
		1.37			77.5	3.000	1.375	NB	1.460	0.24	23.80			1973	86213
		1.37			77.5	2.000	0.999	CT	0.967	0.22	22.90			1973	86213
		1.37			77.5	3.000	1.375	NB	1.400	0.31	27.20			1973	86213
		1.37			77.5	3.000	1.375	NB	1.450	0.23	23.60			1973	86213
		1.37			77.5	3.000	1.375	NB	1.420	0.26	24.80			1973	86213
		1.37			77.5	2.000	0.999	CT	1.007	0.19	21.10			1973	86213
		1.37			77.4	3.000	1.379	NB	1.526	0.12	17.00			1973	86213
T651	Plate	1.37	R.T.	T-L	77.5	3.000	1.378	NB	1.560	0.12	16.80	17.2	0.3	1973	86213
		1.37			78.4	1.990	0.999	CT	0.964	0.12	17.40			1973	86213
		1.37			78.4	2.000	0.999	CT	1.024	0.12	17.50			1973	86213
		1.37			76.3	2.000	1.000	CT	0.963	0.18	20.30			1973	86213
T651	Plate	1.37	84	L-T	76.3	2.000	1.000	CT	0.943	0.22	22.80	21.2	1.4	1973	86213
		1.37			76.3	2.000	1.001	CT	0.950	0.18	20.50			1973	86213
		1.37			77.4	2.000	1.002	CT	1.015	0.12	17.00			1973	86213
T651	Plate	1.37	84	T-L	77.4	2.000	1.002	CT	1.020	0.13	17.80	17.3	0.4	1973	86213
		1.37			77.4	2.000	1.001	CT	1.021	0.12	17.10			1973	86213
		1.37			77.4	2.000	1.001	CT	1.021	0.12	17.10			1973	86213
T651	Plate	1.37	88	S-L	74.4	0.990	0.500	CT	0.506	0.11	15.30	15.4	0.1	1973	86213
		1.37			74.4	1.000	0.500	CT	0.508	0.11	15.50			1973	86213

TABLE 7.2.2.2

ALUMINUM 2020 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T6	Sheet	0.06	R.T.	L-T	75.9	2.000	0.062	0.622	0.890	--	30.80	32.40	29.6	3.1	41.62	34.6	7.0	1973	86213
		0.06			75.9	2.000	0.062	0.622	0.760	--	29.60	31.14			35.56			1973	86213
		0.06			75.9	2.000	0.062	0.621	0.890	--	30.40	31.91			41.08			1973	86213
		0.06			77.0	2.000	0.064	0.625	0.650	--	24.40	25.72			26.39			1973	86213
		0.06			77.0	2.000	0.064	0.625	0.680	--	25.50	26.88			28.41			1973	86213
T6	Sheet	0.06	R.T.	L-T	75.9	3.000	0.061	1.070	1.140	--	21.10	29.72	29.1	0.8	31.05	30.2	1.3	1973	86213
		0.06			75.9	3.000	0.062	1.100	1.140	--	19.90	28.56			29.28			1973	86213
T6	Sheet	0.06	R.T.	L-T	76.9	15.800	0.063	3.000	3.480	--	17.00	37.75	36.1	1.5	40.98	36.9	2.9	1973	86213
		0.06			76.9	15.810	0.063	6.010	6.010	--	10.20	34.46			34.46			1973	86213
		0.06			76.9	15.810	0.063	3.020	3.020	--	16.60	36.99			36.99			1973	86213
		0.06			76.9	15.820	0.063	1.020	1.020	--	27.80	35.28			35.28			1973	86213
		0.06			75.8	2.000	0.062	0.622	0.870	--	26.60	27.98			35.31			1973	86213
T6	Sheet	0.06	R.T.	T-L	75.8	2.000	0.062	0.622	0.880	--	27.20	28.61	25.9	2.8	36.43	30.5	6.6	1973	86213
		0.06			75.8	2.000	0.062	0.624	0.870	--	25.60	26.98			33.98			1973	86213
		0.06			76.0	2.000	0.064	0.625	0.660	--	21.70	22.87			23.71			1973	86213
		0.06			76.0	2.000	0.064	0.625	0.625	--	21.70	22.87			22.87			1973	86213
		0.06			75.8	3.000	0.061	1.190	1.240	--	17.40	26.40			27.21			1973	86213
T6	Sheet	0.06	R.T.	T-L	75.8	3.000	0.062	1.070	1.120	--	19.50	27.47	26.9	0.8	28.34	27.8	0.8	1973	86213
		0.06			75.8	3.000	0.062	1.070	1.120	--	19.50	27.47			28.34			1973	86213
T6	Sheet	0.06	R.T.	T-L	75.6	15.810	0.063	6.000	6.000	--	9.30	31.39	--	--	31.39	--	--	1973	86213

TABLE 7.2.2.2 (CONTINUED)

ALUMINUM 2020 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.)	THICK (in.)	INIT (in.)	FINAL (in.)	ONSET (Ksi)	MAX (Ksi)	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T651	Plate	0.25	R.T.	L-T	77.4	3.000	0.255	1.000	1.310	---	---	22.09	22.3	0.3	26.74	26.4	0.4	1973	86213
		0.25			77.4	3.000	0.256	1.170	1.420	---	---	22.48			26.11				
T651	Plate	0.25	R.T.	L-T	77.4	4.000	0.256	1.330	1.700	---	---	22.67	22.2	0.9	26.92	24.2	2.3	1973	86213
		0.25			77.4	4.000	0.256	1.330	1.330	---	---	22.82			22.82				
		0.25			77.4	4.000	0.256	1.480	1.660	---	---	21.18			23.00				
		1.00			76.1	20.000	1.000	7.000	8.600	---	---	27.29			31.62				
T651	Plate	1.00	R.T.	L-T	76.1	20.000	1.000	7.000	10.050	---	---	25.14	26.2	1.5	33.14	30.5	2.5	1973	86213
		1.00			76.1	20.000	1.000	7.000	9.040	---	---	26.93			32.46				
		1.00			76.1	20.000	1.000	7.000	9.080	---	---	26.93			32.57				
		1.00			76.3	20.000	1.000	7.000	7.600	---	---	26.93			28.49				
		1.00			76.3	20.000	1.000	7.000	8.850	---	---	27.29			32.33				
		1.00			76.3	20.000	1.000	7.000	8.500	---	---	26.93			30.92				
		1.00			76.3	20.000	1.000	7.000	8.400	---	---	27.29			31.06				
		1.00			77.5	20.000	1.000	7.000	8.450	---	---	24.78			28.32				
		1.00			77.5	20.000	1.000	7.000	8.500	---	---	26.21			30.10				
		1.00			77.5	20.000	1.000	7.000	7.910	---	---	22.62			24.63				

TABLE 7.2.2.2 (CONTINUED)

3 of 4

ALUMINUM 2020 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _y	MAX (Ksi) σ _u	K _{app} (Ksi/√in)	K _{app} MEAN	STAN DEV	K _C (Ksi/√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T651	Sheet	0.12	R.T.	T-L	77.4	3.000	0.126	1.100	1.140	--	15.90	22.82	21.8	1.5	23.40	23.5	2.4	1973	86213
		0.12			77.4	3.000	0.126	1.090	1.280	--	16.70	22.39			25.15			1973	86213
		0.12			77.5	3.000	0.126	1.080	1.110	--	15.90	22.54			22.97			1973	86213
		0.12			77.4	3.000	0.127	1.100	1.280	--	14.50	20.81			23.23			1973	86213
		0.12			77.5	3.000	0.127	1.080	1.180	--	15.70	22.25			23.67			1973	86213
		0.12			77.5	3.000	0.127	1.080	1.350	--	17.10	24.24			28.56			1973	86213
		0.12			77.5	3.000	0.127	1.090	1.170	--	17.00	24.25			25.48			1973	86213
		0.12			78.4	3.000	0.127	1.090	1.100	--	13.30	18.97			19.09			1973	86213
		0.12			78.4	3.000	0.127	1.070	1.150	--	14.60	20.57			21.62			1973	86213
		0.12			78.4	3.000	0.127	1.090	1.090	--	14.60	20.83			20.83			1973	86213
		0.12			78.4	3.000	0.127	1.080	1.320	--	14.90	21.12			24.44			1973	86213
		0.12			77.4	3.000	0.128	1.100	1.280	--	14.80	21.24			23.71			1973	86213
T651	Plate	0.25	R.T.	T-L	78.0	3.000	0.256	1.120	1.140	--	10.70	15.55	17.2	2.6	15.74	17.2	2.6	1973	86213
		0.25			78.0	3.000	0.256	1.000	1.000	--	15.00	20.20			20.20			1973	86213
		0.25			78.0	3.000	0.256	1.140	1.140	--	10.70	15.74			15.74			1973	86213
T651	Plate	0.25	R.T.	T-L	78.0	4.000	0.256	1.330	1.330	--	13.50	20.96	20.9	0.1	20.96	20.9	0.1	1973	86213
		0.25			78.0	4.000	0.257	1.330	1.330	--	13.40	20.80			20.80			1973	86213

TABLE 7.2.2.2 (CONCLUDED)

ALUMINUM 2020 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in.)	K _{app} MEAN	STAN DEV	K _C (Ksi√in.)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T651	Plate	1.00	R.T.	T-L	77.4	20.000	1.000	7.000	7.000	---	5.40	19.39	19.4	0.8	19.39	19.4	0.8	1973	86213
		1.00			77.4	20.000	1.000	7.000	7.000	---	5.60	20.11			20.11			1973	86213
		1.00			77.4	20.000	1.000	7.000	7.000	---	6.90	21.19			21.19			1973	86213
		1.00			77.4	20.000	1.000	7.000	7.000	---	5.60	20.11			20.11			1973	86213
		1.00			77.5	20.000	1.000	7.000	7.000	---	5.40	19.39			19.39			1973	86213
		1.00			77.5	20.000	1.000	7.000	7.000	---	5.40	19.39			19.39			1973	86213
		1.00			77.5	20.000	1.000	7.000	7.000	---	5.40	19.39			19.39			1973	86213
		1.00			77.5	20.000	1.000	7.000	7.000	---	5.40	19.39			19.39			1973	86213
		1.00			77.5	20.000	1.000	7.000	7.000	---	5.50	19.75			19.75			1973	86213
		1.00			78.4	20.000	1.000	7.000	7.000	---	6.20	18.67			18.67			1973	86213
		1.00			78.4	20.000	1.000	7.000	7.000	---	5.30	19.03			19.03			1973	86213
		1.00			78.4	20.000	1.000	7.000	7.000	---	5.10	18.31			18.31			1973	86213
		1.00			78.4	20.000	1.000	7.000	7.000	---	5.10	18.31			18.31			1973	86213
		1.00			78.4	20.000	1.000	7.000	7.000	---	5.10	18.31			18.31			1973	86213

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R

2020

Condition/Ht: T6
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 13.3 Hz
 Environment: LAB AIR; RT

Yield Strength: 78.4 ksi
 Ult. Strength: 84.7 ksi
 Specimen Thk: 0.125 - 0.126 in.
 Specimen Width: 4 in.
 Ref: 86213

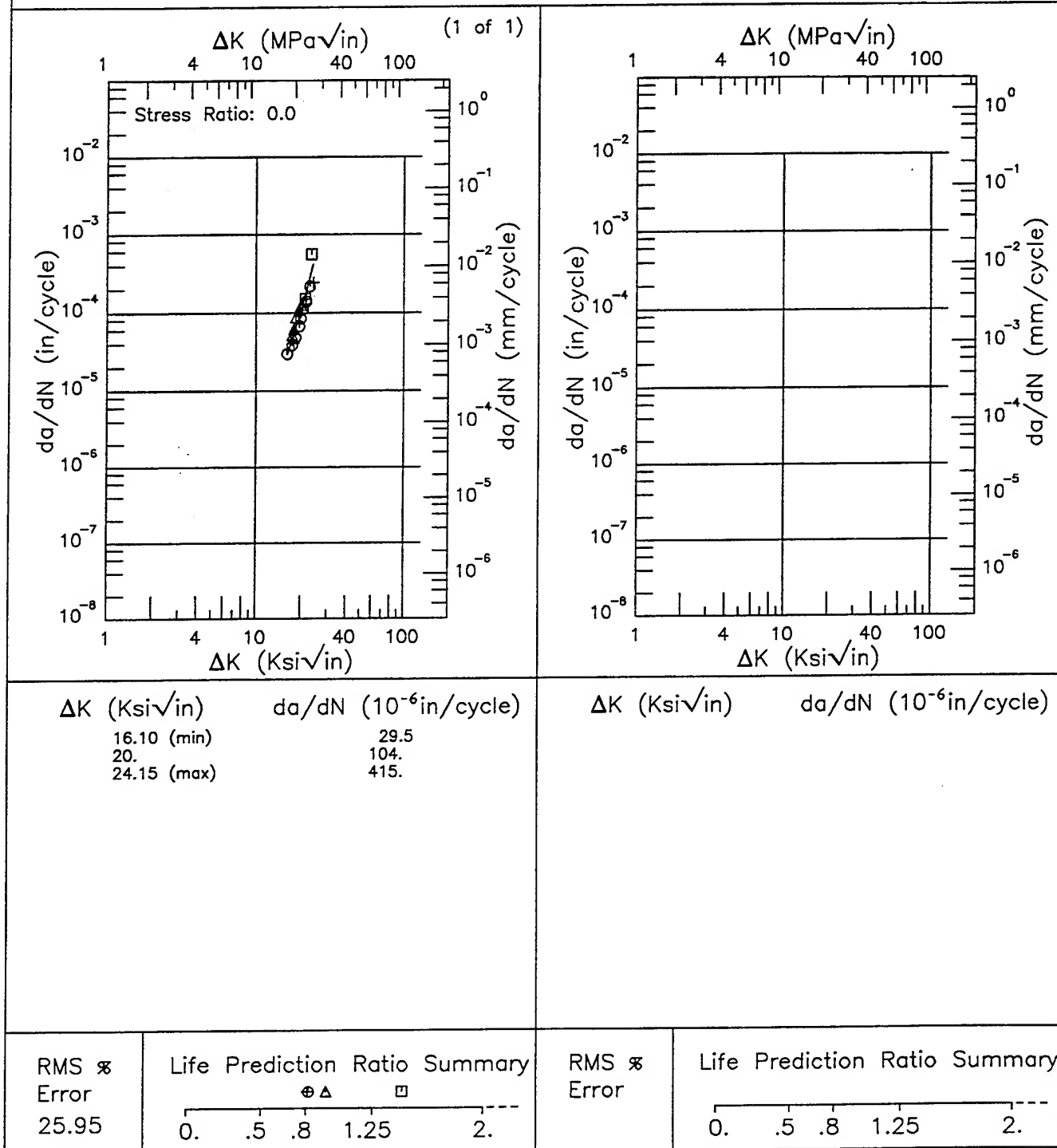


Figure 7.2.3.1.1

Condition/Ht: T651
 Form: 1.28 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 25 Hz
 Environment: H.H.A.; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.248 in.
 Specimen Width: 2.5 in.
 Ref: AL002

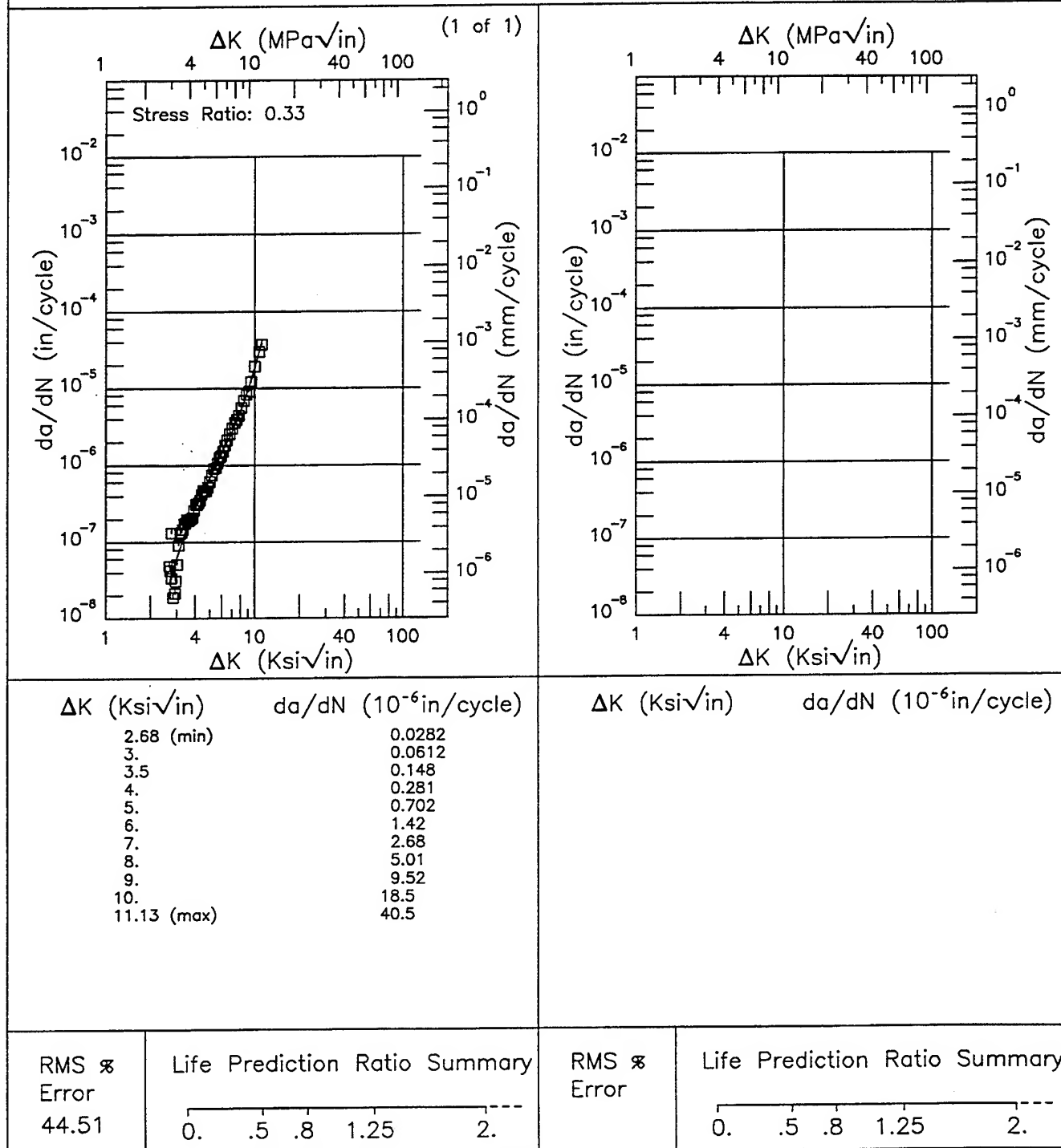


Figure 7.2.3.1.2

R 2020

Condition/Ht: T651
 Form: 1.38 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 5.2 Hz
 Environment: LAB AIR; RT

Yield Strength: 76.2 ksi
 Ult. Strength: 81.7 ksi
 Specimen Thk: 0.748 - 0.754 in.
 Specimen Width: 2.997 - 3.003 in.
 Ref: 86213

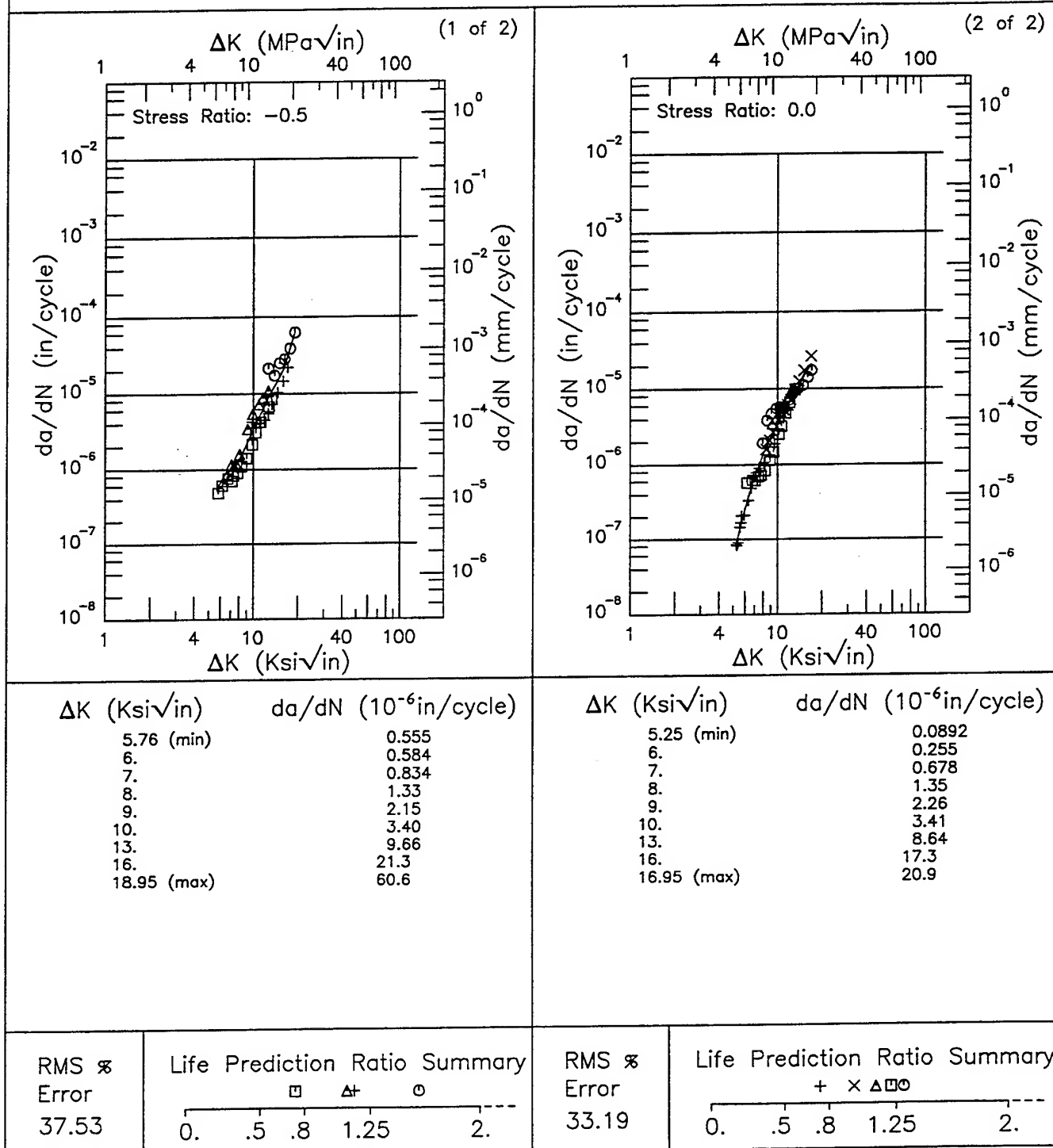


Figure 7.2.3.1.3

TABLE 7.2.3.3

(1 of 1)

K_{Isec} SUMMARY FOR ALUMINUM ALLOY 2020

Condition/Ht	Prod Form	Test Temp (°F)	Spec Or.	Yield Str (Ksi)	Envir.	Specimen			Prod Thk (in)	Crack (in)	K _q (Ksi√in)	K _{Isec} (Ksi√in)	Test Time (min)	Test Date	Reference
						Design	Width (in)	Thick (in)							
T651	P	R.T.	S-L	60	3.5% NaCl	DCB	4	1	1	---	13	9	---	1968	84331

TABLE 7.3.2.2

ALUMINUM 2020 (ALCLAD) K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in.)	K _{app} MEAN	STAN DEV	K _C (Ksi√in.)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T6	Sheet	0.12	R.T.	L-T	68.6	2.980	0.122	0.988	1.350	---	23.10	30.90	31.8	0.9	38.65	40.2	3.3	1973	86213
		0.12			68.6	3.000	0.122	1.100	1.410	---	22.50	32.30			38.94			1973	86213
		0.12			68.6	3.000	0.122	1.290	1.610	---	20.20	32.55			39.39			1973	86213
		0.12			68.6	2.970	0.123	0.995	1.550	---	23.10	30.83			43.63			1973	86213
		0.12			68.6	2.970	0.123	0.990	1.570	---	24.00	32.16			45.89			1973	86213
		0.12			68.6	3.000	0.123	1.000	1.250	---	24.50	33.00			38.78			1973	86213
		0.12			68.6	3.000	0.123	1.000	1.250	---	23.00	30.98			36.18			1973	86213
		0.06			68.0	15.800	0.062	4.000	4.130	---	13.30	34.72			35.38			1973	86213
T6	Sheet	0.06	R.T.	L-T	68.0	15.800	0.062	3.990	---	---	14.10	36.76	34.6	2.2	---	34.1	1.8	1973	86213
		0.06			68.0	15.800	0.063	3.990	4.090	---	12.40	32.32			32.80			1973	86213
		0.12			68.4	3.000	0.121	1.100	1.380	---	15.90	22.82			27.03			1973	86213
		0.12			68.4	2.960	0.122	0.993	1.540	---	18.90	25.37			35.54			1973	86213
		0.12			68.4	2.970	0.122	0.983	1.500	---	19.10	25.46			35.01			1973	86213
		0.12			68.4	2.970	0.122	0.989	1.500	---	18.10	24.22			33.17			1973	86213
		0.12			68.4	2.970	0.122	0.997	1.540	---	17.90	24.08			33.61			1973	86213
		0.12			68.4	3.000	0.122	1.110	1.310	---	15.00	21.67			24.46			1973	86213
T6	Sheet	0.12	R.T.	T-L	68.4	3.000	0.123	1.000	1.000	---	18.00	24.24	24.1	1.3	24.24	30.4	5.0	1973	86213
		0.12			68.4	3.000	0.123	1.000	---	---	18.40	24.78			---			1973	86213
		0.06			67.2	15.800	0.064	4.020	---	---	12.10	31.68			---			1973	86213
		0.06			67.2	15.820	0.064	4.010	4.400	---	12.60	32.94			34.80			1973	86213
		0.06			67.2	15.820	0.064	4.000	4.200	---	12.30	32.11			33.04			1973	86213
		0.12			68.4	3.000	0.123	1.000	---	---	18.40	24.78			---			1973	86213
		0.12			68.4	3.000	0.123	1.000	---	---	18.40	24.78			---			1973	86213
		0.12			68.4	3.000	0.123	1.000	---	---	18.40	24.78			---			1973	86213
T6	Sheet	0.06	R.T.	T-L	67.2	15.800	0.064	4.020	---	---	12.10	31.68	32.2	0.6	---	33.9	1.2	1973	86213
		0.06			67.2	15.820	0.064	4.010	4.400	---	12.60	32.94			34.80			1973	86213
		0.06			67.2	15.820	0.064	4.000	4.200	---	12.30	32.11			33.04			1973	86213

TABLE 7.4.1.1

1 of 1

**MEAN PLANE STRAIN FRACTURE TOUGHNESS
FOR ALUMINUM 2000/6000 SERIES ALLOY 2021 AT ROOM TEMPERATURE**

Product Form	Condition/Heat Treatment	K_{Ic} (ksi \sqrt{in})									
		Specimen Orientation									
		L-T			T-L			S-L			
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	
Plate	T81	27.	0.5	3	---	---	---	---	---	---	
	T81 REPAIR WELD + AGE WITH 2319 FILLER WIRE	---	---	---	15.8	0.7	6	---	---	---	
	T81 WELD + AGE WITH 2319 FILLER WIRE	---	---	---	19.4	2.7	9	---	---	---	

TABLE 7.4.2.1

ALUMINUM 2021 K_{10}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) λ	$2.5 \cdot (K_{10}/TBS)^2$ (in.)	K_{10}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K_{10} (Ksi/in.)	K_{10} MEAN	STAN DEV		
T81	Plate	1.00	R.T.	L-T	61.2	1.990	0.996	CT	0.937	0.47	26.60	27.0	0.5	1972	84363
		1.00			61.2	2.000	0.995	CT	0.933	0.50	27.50			1972	84363
		1.00			61.2	2.000	0.993	CT	0.961	0.48	26.80			1972	84363
		1.00			...	2.000	1.000	CT	1.000	0.15	15.90			1970	80073
		1.00			...	2.000	1.000	CT	1.010	0.14	15.20			1970	80073
T81 REPAIR WELD + AGE WITH 2319 FILLER WIRE	Plate	1.00	R.T.	T-L	...	2.000	1.000	CT	0.990	0.14	15.20	15.8	0.7	1970	80073
		1.00			...	2.000	1.000	CT	1.030	0.16	16.00			1970	80073
		1.00			...	2.000	1.000	CT	1.040	0.14	15.20			1970	80073
		1.00			...	2.000	1.000	CT	1.020	0.18	17.00			1970	80073
		1.00			...	2.000	1.000	CT	1.040	0.19	17.60			1970	80073
T81 WELD + AGE WITH 2319 FILLER WIRE	Plate	1.00	R.T.	T-L	...	2.000	1.000	CT	1.030	0.20	18.40	19.4	2.7	1970	80073
		1.00			...	2.000	1.000	CT	0.990	0.16	16.40			1970	80073
		1.00			...	2.000	1.000	CT	1.020	0.32	22.90			1970	80073
		1.00			...	2.000	1.000	CT	1.080	0.22	18.90			1970	80073
		1.00			...	2.000	1.000	CT	1.050	0.33	23.20			1970	80073
T8151	Plate	1.00	84	L-T	64.8	1.500	0.749	CT	0.706	0.32	23.10	22.6	0.8	1973	86213
		1.00			64.8	1.500	0.749	CT	0.714	0.29	22.00			1973	86213
		1.00			63.4	1.500	0.751	CT	0.726	0.23	19.10			1973	86213
		1.00			...	2.000	1.000	CT	1.010	0.31	22.60			1970	80073
		1.00			...	2.000	1.000	CT	1.040	0.19	17.50			1970	80073
T8151	Plate	1.00	84	T-L	63.4	1.500	0.751	CT	0.726	0.23	19.10	...	...	1973	86213
		1.00			63.4	1.500	0.751	CT	0.726	0.23	19.10			1973	86213

TABLE 7.4.3.3

(1 of 1)

K_{Isc} SUMMARY FOR ALUMINUM ALLOY 2021

Condition/Ht	Prod Form	Test Temp (°F)	Spec Or.	Yield Str (Ksi)	Envir.	Specimen			Prod Thk (in)	Crack (in)	K _Q (Ksi√in)	K _{Isc} (Ksi√in)	Test Time (min)	Test Date	Refer
						Thick (in)	Design	Width (in)							
T81	P	R.T.	S-L	59.1	Industrial Atm	1	CT	2	2.5	---	19.6	19	---	1973	86688
					Salt-Dichromate-Acetate	1	CT	2	2.5	---	19.6	19	---	1973	86688
					Saecoat Atm	1	CT	2	2.5	---	19.6	19	---	1973	86688
T81 Overheated Weld	P	R.T.	S-L	18.3	3.5% NaCl	1	WOL	2.5	1	---	14	11.3	---	1970	80073
T81 Repaired Weld Aged 16hr 325F Heat Affected Zone	P	R.T.	S-L	28	3.5% NaCl	1	WOL	2.5	1	---	14	11.9	---	1970	80073
T81 Repaired Weld Aged 16hr 325F Weld Center Line	P	R.T.	S-L	24.7	3.5% NaCl	1	WOL	2.5	1	---	14	>10.3	---	1970	80073
T81 Repaired Weld Aged 16hr 325F Weld Fusion Line	P	R.T.	S-L	24.7	3.5% NaCl	1	WOL	2.5	1	---	14	7.7	---	1970	80073
T81 Welded Aged 16hr 325F Fusion Line	P	R.T.	S-L	23.4	3.5% NaCl	1	WOL	2.5	1	---	17	8.5	---	1970	80073
T81 Welded Aged 16hr 325F Heat Affected Zone	P	R.T.	S-L	25	3.5% NaCl	1	WOL	2.5	1	---	14	13.3	---	1970	80073
T81 Welded Aged 16hr 325F Weld Center Line	P	R.T.	S-L	23.4	3.5% NaCl	1	WOL	2.5	1	---	17	7.2	---	1970	80073

TABLE 7.5.1.1

**MEAN PLANE STRAIN FRACTURE TOUGHNESS
FOR ALUMINUM 2000/6000 SERIES ALLOY 2024 AT ROOM TEMPERATURE**

Product Form	Condition/Heat Treatment	K_{Ic} (ksi√in)									
		Specimen Orientation									
		L-T			T-L			S-L			
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	
Plate	T351	33.4	3.9	5	---	---	---	---	---	---	
	T851	23.3	2.4	65	20.7	1.9	63	---	---	---	
Forging	T852	29.2	5.2	24	18.9	2.6	16	15.9	0.8	8	
	T351	---	---	---	25.	0.9	5	---	---	---	
Extrusion	T3511	38.	2.6	4	---	---	---	---	---	---	
	T8510	30.4	2.7	3	16.5	1.	3	15.7	1.4	3	
	T8511	24.1	0.4	2	16	0	2	---	---	---	

TABLE 7.5.1.2.1

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE**

ORIENTATION: L-S

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Kst ₁ /in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.1	20		0.5				
		0.1	20			6.28			
		0.1	30		0.35				

TABLE 7.5.1.2.2

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: L-T **ENVIRONMENT: 3.5% NaCl**

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.02	1			9.77	67.6		
		0.02	10			3.23	73.3		

TABLE 7.5.1.2.3

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: L-T				ENVIRONMENT: Distilled Water						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
				ΔK Level (Ksi \sqrt{in})						
				2.5	5.0	10.0	20.0	50.0	100.0	
T3	SHEET	0.05	1			5.35	46.79			
		0.05	1			6.16	69.97			
		0.05	1			6.35				
		0.8	1		0.99					
T351	PLATE	0.05	1			6.67	74.93			
		0.8	1	0.07	1.15					
T851	PLATE	0.08	1			7.03				

TABLE 7.5.1.2.4

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2014 AT ROOM TEMPERATURE**

ORIENTATION: L-T				ENVIRONMENT: Dry Air						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10 ⁻⁶ in/cycle)						
				ΔK Level (Ksi√in)						
				2.5	5.0	10.0	20.0	50.0	100.0	
T3	UNSPECIFIED	0.2	20			3.87	25.62			
		0.2	20			3.61	22.15			
		0.2	20			3.63	26.99			
		0.2	20			3.61	25.31			
		0.2	20			3.69	27.38			
		0.2	20			3.72	26.67			
		0.2	20			3.98	24.48			
		0.2	20			4.08	24.89			
		0.2	20			3.68	23.05			
		-0.25	6			4.01	43.64			
T81	SHEET	0.08	1			5.91	74.38			
		0.08	6			6.45				
		0.1	6			5.81	54.96			
		0.3	6			9.26	69.55			
		0.3	6			8.65	206.08			

TABLE 7.5.1.2.4 (CONCLUDED)

2 of 2

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2014 AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: Dry Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T81 (Cont'd)	SHEET (Cont'd)	0.5	6		1.36	14.82			
		0.5	6		1.43	13.78	258.73		
		0.5	6		1.2	19.32	679.33		
T851	PLATE	0.08	1			6.36			
		0.08	6			9.2			
		0.3	1			12.91			
T852	FORGING	0.08	0.1			5.8			
		0.08	1		1.1	9.91			
		0.08	6			3.73	43.14		
		0.08	6			3.34	21.21		

TABLE 7.5.1.2.5

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T3	SHEET	0.05	2				35.29		
T351	SHEET	0.	9			4.18			
		0.7	9		0.64	8.42			
	PLATE	0.33	25		0.7	11.63	94.93		
T3511	EXTRUSION	0.05	9		0.07	5.99			
		0.5	9	0.06					
		0.5	9		0.47	10.68	65.82		
T62	SHEET	0.1	1		0.31	4.6			
		0.3	1		0.46	10.06	96.42		
		-0.25	1		0.3	7	49.16		
T81	SHEET	0.1	0.1			43.86			
		0.1	1			7.82	68.06		
		0.3	1		1.04	14.51			
		0.5	1		1.48	17.19			
T851	PLATE	0.33	25		0.92	12.36			

TABLE 7.5.1.2.6

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 ALLOYS AT ROOM TEMPERATURE

ORIENTATION:L-T				ENVIRONMENT: JP-4 Jet Fuel						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
				ΔK Level (Ksi/in)						
				2.5	5.0	10.0	20.0	50.0	100.0	
T81	SHEET	0.08	1			8.11	66.34			
		0.08	1			7.52	75.1			
T851	PLATE	0.02	10			7.85	42.48			
		0.08	1			8.43	108.16			

TABLE 7.5.1.2.7

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (K_{SI}/\sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T3	SHEET	0.	13.3						
		0.05	5	0.04	0.44	5.11	37.22		
		0.05	5		0.23	4.34	94		
		0.05	10		0.27	4.1	31.19		
		0.2	10		0.24	10.21	29.54		
		0.33	3.33				196.72		
		0.4	5	0.09	0.47	8.19	108.59		
		0.4	5	0.09	0.65	9.28	84.19		
		0.4	8-15		0.45	9.34	134.24		
		0.8	10	0.16	1.89	29.04			
		0.8	10-15	0.15	1.12	18.49			
	PLATE	-1	20			10.37	72.53		
		-0.5	20		0.17	12.2	68.27		
		0.05	20			9.8			

TABLE 7.5.1.2.7 (CONTINUED)

2 of 4

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level ($Ksi\sqrt{in}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T351	SHEET	0.	6			6.14	44.18		
		0.4	3				165.36		
		0.8	6			39.33			
	PLATE	-1	2-3				108.2		
		-1	5		0.27	8.6	43.68		
		-1	3-6				62.29		
		-1	2-10		0.5	10.3	152.02		
		-0.5	3-5		0.3	6.24	45.67		
		0.	1-6						
		0.	10-20		0.16				
		0.01	2-5		0.22	5.84	49.75		
		0.01	20			5.96	52.12		
		0.05	5				65.03		
		0.05	5						
		0.05	10		0.35	7.28	42.32		
		0.05	5-15		0.17	6.04	45.39		

TABLE 7.5.1.2.7 (CONTINUED)

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-5} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T351 (Cont'd)	PLATE (Cont'd)	0.1	3				54.97		
		0.1	20			8.51			
		0.3	20			10.52			
		0.33	25			8.21			
		0.4	3				241.62		
		0.4	5		0.69	11.71			
		0.4	10		0.62				
		0.4	10		0.55	6	83.87		
		0.4	12	0.04	0.57	10.72			
		0.6	20			13.16			
		0.6	10		0.81	12.69			
		0.6	20			14.67			
		0.8	1-5		1.85	32.4			
		0.8	5-10			27.69			
		0.8	5-10		1.42				

TABLE 7.5.1.2.7 (CONCLUDED)

4 of 4

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T361 (Cont'd)	PLATE (Cont'd)	0.8	16	0.12	1.19				
		0.8	3-16			58.84			
		0.8	20	0.13	1.79				
T3611	EXTRUSION	0.05	9		0.13				
		0.1	20		0.14	5.32	72.99		
		0.5	9	0.08					
		0.5	20	0.04	0.46	12.95			
		0.8	20		1.3				
		0.8	25	0.13					
T42	PLATE	-1	10			6.41	43.76		
		0.02	10			4.41	20.66	998.91	
		0.5	10		0.43	7.79	43.92		
T81	SHEET	0.05	2				63.62		
		0.4	2				100.13		
T851	PLATE	0.02	10			3.59	43.67		

TABLE 7.5.1.2.8

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: L-T		ENVIRONMENT: S.C.S.						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level (Ksi \sqrt{in})				
				2.5	5.0	10.0	20.0	50.0
T852	FORGING	0.08	1		1.47	9.64		100.0

TABLE 7.5.1.2.9

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
				ΔK Level (Ksi \sqrt{in})						
				2.5	5.0	10.0	20.0	50.0	100.0	
T361	SHEET	0.	1			3.16				
		0.33	10				115.83			
	PLATE	0.05	1			5.95	84.96			
		0.4	1			11.28				
T62	SHEET	0.8	1		1					
		0.1	1		0.74	8.18				
	SHEET	0.5	1		1.48					
		0.7	1		1.92					
T81	SHEET	-0.2	1		0.77	12.72				
		0.08	1			7.92	87.69			
	SHEET	0.08	1			9.17	75.72			
		0.1	1		0.37	8.25				
T851	PLATE	0.08	1			7.87	101.73			

2024

TABLE 7.5.1.2.10

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE**

ORIENTATION: T-S			ENVIRONMENT: 3.5% NaCl							
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
				ΔK Level (Ksi/in)						
				2.5	5.0	10.0	20.0	50.0	100.0	
T851	PLATE	0.1	20		1.19					
		0.1	20			7.07				
		0.1	20			5.71				
		0.5	20			9.89	229.11			
		0.5	20		1.03	9.8				

TABLE 7.5.1.2.11

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: T-S

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T861	PLATE	0.1	20		0.59	5.14			
		0.1	20		0.57	5.29			
		0.5	2		0.69	11.71			
		0.5	2		0.95				
		0.5	20	0.07	1.26	8.43			

TABLE 7.5.1.2.12

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: T-L				ENVIRONMENT: 3.5% NaCl						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
				ΔK Level (KSI/in)						
				2.5	5.0	10.0	20.0	50.0	100.0	
T851	PLATE	0.1	20		1.43	10.37	130.27			
		0.1	20		0.96	9.7				
		0.5	20	0.21	2.28	22.43				

TABLE 7.5.1.2.13

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: T-L

ENVIRONMENT: Distilled Water

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T3	SHEET	0.05	1			5.5	53.56		
		0.05	1-5			3.48	39.11		
		0.8	1		0.91				
		0.8	1-5	0.28	1.47				

TABLE 7.5.1.2.14

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE**

ORIENTATION: T-L**ENVIRONMENT: Dry Air**

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T82	SHEET	0.1	6		0.8	11.85			
		0.3	6		0.68	11.37			
		0.5	6	0.05	0.94	14.87			
T81	SHEET	-0.25	6			3.63	48.23		
		0.08	6			4.3	74.54		
		0.1	6			3.53			
T851	PLATE	0.08	1			5.9			
		0.08	6			9.54			

TABLE 7.5.1.2.15

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: T-L				ENVIRONMENT: H.H.A.						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
				ΔK Level (Ksi/in)						
				2.5	5.0	10.0	20.0	50.0	100.0	
T62	SHEET	0.3	1		0.79	11.71				
		0.5	1	0.13	1.28	14.95				
		-0.25	1			5.4	69.48			
T81	SHEET	0.1	1			6.41	131.38			
		0.5	1		1.58	21.7				
		0.1	20			8.28	79.17			
T851	PLATE	0.1	20		0.51	9.76				
		0.5	20	0.12	1.38	17.74				

TABLE 7.5.1.2.16

1 of 2

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE**

ORIENTATION: T-L

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.5	6.0	10.0	20.0	50.0	100.0
T3	SHEET	0.05	3-10		0.34	4.66	42.37		
		0.05	30		0.26				
		0.4	0.5-15	0.08	0.78	12.88	107.86		
		0.4	30		0.95				
		0.6	30		1.24				
		0.8	2-10	0.17	1.65	28.91			
T852	FORGING	0.33	5.17			5.53			
T861	SHEET	0.08	0.1-0.3				666.53		
		0.08	10-15		0.68	7.97			
		0.1	0.1-0.4				792.88		
		0.1	2-3				92.68		
		0.1	5				108.72		
		0.1	4-9			7.84			
		0.1	3-10				790.1		
		0.1	10			9.92			

TABLE 7.5.1.2.16 (CONCLUDED)

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: T-L

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T861 (Cont'd)	SHEET (Cont'd)	0.1	13		1				
		0.1	10-15		1.07	9.82			
		0.4	10-15		1.26	31.84			
	PLATE	0.1	1				153.61		
		0.1	1.5-5				173.27		
		0.1	10			6.94			

TABLE 7.5.1.2.17

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 AT ROOM TEMPERATURE

ORIENTATION: T-L

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T62	SHEET	-0.25	1		0.97	5.33			
		0.1	1		0.82	5.86			
		0.3	1		1.3	16.22			
		0.5	1	0.11	2.5	25.44			
T81	SHEET	0.08	1			6.85	98		
		0.1	1		0.36	7.39	130.7		
T8E2	FORGING	0.08	1			5.19			

TABLE 7.5.2.1

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ALUMINUM 2024 K _{IC}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{IC} /TYS) ^a (in.)	K _{IC}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{IC} (Ksi • √in.)	K _{IC} MEAN	STAN DEV		
T351	Plate	1.00	-65	L-T	55.7	2.008	0.999	CT	0.968	0.97	34.75	35.3	0.9	1987	DA005
		1.00			55.7	2.005	0.992	CT	0.966	0.98	34.89			1987	DA005
		1.00			60.1	2.006	1.000	CT	1.031	0.91	36.32			1987	DA004
T351	Plate	2.50	R.T.	L-T	53.8	2.000	1.000	CT	0.995	0.78	30.00	33.4	3.9	1973	86213
		1.00			54.3	2.009	0.999	CT	0.924	0.86	31.81			1987	DA005
		1.00			54.3	2.006	1.000	CT	0.946	0.83	31.32			1987	DA005
		3.00			54.5	4.000	2.000	NB	---	---	40.00			1972	82878
		1.00			57.0	2.007	1.000	CT	0.976	0.88	33.80			1987	DA004
		2.00			43.8	4.010	2.000	CT	2.147	1.51	34.00			1973	86213
T351	Plate	3.00	R.T.	S-T	64.0	2.500	1.250	CT	---	0.30	22.00	21.3	0.6	1974	90011
		3.00			64.0	2.500	1.250	CT	---	0.27	21.00			1974	90011
		3.00			64.0	2.500	1.250	CT	---	0.27	21.00			1974	90011
		1.00			49.0	1.500	0.750	CT	0.755	0.74	26.60			1973	86213
T351	Plate	1.00	84	T-L	49.0	1.500	0.749	CT	0.749	0.72	26.30	26.5	0.2	1973	86213
		2.50			55.9	2.000	1.000	CT	1.032	0.63	28.10			1973	86213
T351	Plate	2.50	85	L-T	55.9	2.000	1.000	CT	1.001	0.60	27.40	27.8	0.5	1973	86213
T351	Plate	2.50	85	S-L	44.8	2.000	0.999	CT	0.928	0.59	21.80	---	---	1973	86213
T351	Plate	2.50	90	S-L	42.4	2.040	1.000	CT	1.021	0.50	18.90	---	---	1973	86213
T351	Extrusion	3.00	R.T.	T-L	41.8	2.990	1.498	CT	1.561	0.92	25.30	25.0	0.9	1973	86213
		3.00			41.8	2.990	1.498	CT	1.555	0.93	25.50			1973	86213
		5.00			43.4	2.990	1.500	CT	1.558	0.73	23.40			1973	86213
		3.00			43.5	3.000	1.500	CT	1.579	0.83	25.10			1973	86213
		3.00			43.5	3.000	1.499	CT	1.562	0.86	25.50			1973	86213
		3.00			43.5	3.000	1.499	CT	1.562	0.86	25.50			1973	86213

TABLE 7.5.2.1 (CONTINUED)

ALUMINUM 2024 K ₁₀															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₁₀ TS) ² (in.)	K ₁₀			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K ₁₀ (Ksi • √in.)	K ₁₀ MEAN	STAN DEV		
T351	Extrusion	3.50	82	T-L	38.7	2.000	1.000	CT	1.048	0.95	23.80	24.1	0.3	1973	86213
		5.00			41.1	3.000	1.498	CT	1.528	0.88	24.40			1973	86213
		5.00			41.1	3.000	1.499	CT	1.514	0.85	24.00			1973	86213
T351	Extrusion	3.00	82	S-L	41.7	2.000	0.999	CT	1.017	0.72	22.40	22.5	1.1	1973	86213
		3.00			41.7	2.000	1.000	CT	1.012	0.63	21.00			1973	86213
		3.00			42.8	2.000	1.000	CT	0.988	0.73	23.20			1973	86213
		3.00			42.8	2.000	1.000	CT	1.007	0.75	23.50			1973	86213
T351	Forged Bar	3.50	82	T-L	41.5	2.000	0.999	CT	1.050	0.94	25.50	24.5	0.9	1973	86213
		3.50			41.5	2.000	1.000	CT	1.045	0.92	25.20			1973	86213
		5.00			44.5	3.000	1.500	CT	1.594	0.75	24.40			1973	86213
		5.00			44.5	3.000	1.500	CT	1.506	0.80	25.10			1973	86213
		3.00			45.7	3.000	1.500	CT	1.504	0.63	23.00			1973	86213
		3.00			45.7	3.000	1.500	CT	1.480	0.69	24.00			1973	86213
T351	Forged Bar	3.00	82	S-L	42.1	1.990	1.002	CT	0.963	0.75	23.00	22.9	0.2	1973	86213
		3.00			42.1	1.990	1.001	CT	0.970	0.73	22.70			1973	86213
T3511	Extrusion	1.00	0	T-L	---	1.998	0.989	CT	1.070	---	25.15	25.0	0.3	1990	SW001
		1.00			---	1.996	0.989	CT	1.071	---	24.94			1990	SW001
		1.00			---	1.999	0.989	CT	1.095	---	25.24			1990	SW001
		1.00			---	1.999	0.989	CT	1.077	---	24.65			1990	SW001
T3511	Extrusion	---	R.T.	L-T	61.2	---	1.200	CCP Max Load	---	1.06	39.90	38.0	2.6	1978	BW007
		---			61.2	---	1.200	CCP Max Load	---	1.03	39.30			1978	BW007
		---			61.2	---	1.200	CCP Max Load	---	0.98	38.40			1978	BW007
		---			61.2	---	1.200	CCP Max Load	---	0.78	34.20			1978	BW007

TABLE 7.5.2.1 (CONTINUED)

ALUMINUM 2024 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K ₀₁)	SPECIMEN			CRACK LENGTH (in.) A	3.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K ₀₁ • √in.)	K _{1c} MEAN	STAN DEV		
T851	Plate	1.39	-320	T-L	79.0	3.000	1.390	NB	1.490	0.20	22.10	22.2	0.1	1971	84288
		1.39				3.000	1.390	NB	1.480	0.20	22.20			1971	84288
T851	Plate	1.39	-112	T-L	69.2	3.000	1.390	NB	1.520	0.24	21.30	22.0	1.0	1971	84288
		1.39				3.000	1.390	NB	1.570	0.27	22.70			1971	84288
T851	Plate	3.00	-65	L-S	64.4	1.500	0.750	CT	0.750	0.55	30.30	30.3	1.1	1972	83243
		3.00				1.500	0.750	CT	0.750	0.59	31.40			1972	83243
		3.00				1.500	0.750	CT	0.750	0.52	29.30			1972	83243
		3.00				1.500	0.750	CT	0.750	0.43	27.60			1972	83243
T851	Plate	3.00	-65	L-T	66.8	1.500	0.750	CT	0.750	0.33	24.40	26.2	1.6	1972	83243
		3.00				1.500	0.750	CT	0.750	0.39	26.50			1972	83243
		3.00				1.500	0.750	CT	0.750	0.31	23.30			1972	83243
T851	Plate	3.00	0	L-S	63.3	1.500	0.750	CT	0.750	0.63	31.70	31.6	0.2	1972	83243
		3.00				1.500	0.750	CT	0.750	0.62	31.40			1972	83243
		3.00				1.500	0.750	CT	0.750	0.37	25.20			1972	83243
T851	Plate	3.00	0	L-T	65.5	1.500	0.750	CT	0.750	0.45	27.90	27.5	2.2	1972	83243
		3.00				1.500	0.750	CT	0.750	0.51	29.50			1972	83243
		3.00				1.500	0.750	CT	0.750	0.30	22.90			1972	83243
T851	Plate	3.00	0	T-L	65.5	1.500	0.750	CT	0.750	0.25	20.80	21.9	1.5	1972	83243
		3.00				1.500	0.750	CT	0.750	0.69	32.20			1972	83243
		3.00				1.500	0.750	CT	0.750	0.61	30.00			1972	83243
T851	Plate	3.00	R.T.	L-S	61.0	1.500	0.750	CT	0.750	0.57	31.70	27.5	4.5	1972	83243
		3.00				1.500	0.750	CT	0.750	0.67	31.70			1972	83243
		3.00				1.500	0.750	CT	0.750	0.87	31.70			1972	83243
		1.37				1.006	0.499	CT	0.493	0.28	22.90			1978	MPC01

TABLE 7.5.2.1 (CONTINUED)

ALUMINUM 2024 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi • √in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	1.37	R.T. Cont'd	L-S Cont'd	66.1	1.006	0.499	CT	0.513	0.27	21.90	Cont'd	Cont'd	1978	MPC01
		1.50			67.5	1.200	0.602	CT	0.623	0.38	26.20			1973	86429
T851	Plate	3.20	R.T.	L-T	59.3	2.500	1.254	CT	1.226	0.25	18.60	23.3	2.4	1971	84360
		3.20			59.3	2.500	1.243	CT	1.206	0.25	18.70			1971	84360
		2.50			60.0	1.990	1.000	CT	1.005	0.40	23.90			1973	86213
		4.00			62.4	2.000	1.020	NB	...	0.39	24.60			1974	90981
		4.00			62.4	2.000	1.020	NB	...	0.38	24.40			1974	90981
		3.00			63.4	1.500	0.750	CT	0.750	0.45	26.90			1972	83243
		3.00			63.4	1.500	0.750	CT	0.760	0.47	27.30			1972	83243
		2.00			63.8	2.500	1.251	CT	1.311	0.41	25.70			1971	84360
		2.00			63.8	2.500	1.250	CT	1.303	0.40	25.50			1971	84360
		2.00			63.9	2.500	1.250	CT	1.203	0.30	22.10			1971	84360
		2.00			63.9	2.500	1.250	CT	1.207	0.30	22.30			1971	84360
		3.00			65.0	2.500	0.625	CT	1.232	0.28	21.90			1972	84306
		3.00			65.0	2.000	0.750	CT	...	0.34	24.00			1974	90011
		3.00			65.0	2.490	0.625	CT	1.259	0.27	21.30			1972	84306
		3.00			65.0	2.000	0.620	CT	...	0.50	29.00			1974	90011
		3.00			65.0	2.480	0.624	CT	1.292	0.25	20.70			1972	84306
		3.00			65.0	3.000	1.000	CT	...	0.26	21.00			1974	90011
		3.00			65.0	3.000	1.000	CT	...	0.28	22.00			1974	90011
3.00	65.0	2.000	0.750	CT	...	0.37	25.00	1974	90011						
3.00	65.0	2.500	0.626	CT	1.239	0.34	23.80	1972	84306						

TABLE 7.5.2.1 (CONTINUED)

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ALUMINUM 2024 K ₁₀															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Kcal)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₁₀ TYS) ^a (in.)	K ₁₀ (Kcal • √in.)	K ₁₀		DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN				K ₁₀ MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	3.00	R.T. Cont'd	L-T Cont'd	65.0	3.000	1.000	CT	---	0.26	21.00	Cont'd	Cont'd	1974	90011
		1.75			65.0	5.990	0.499	CT	3.035	0.44	27.30			1972	84306
		3.00			65.0	2.000	0.750	CT	---	0.37	25.00			1974	90011
		3.00			65.0	2.000	0.620	CT	---	0.50	29.00			1974	90011
		1.75			65.0	3.000	0.755	CT	1.515	0.31	22.90			1972	84306
		1.75			65.0	5.990	0.499	CT	3.064	0.46	27.80			1972	84306
		1.75			65.0	3.000	0.755	CT	1.500	0.32	23.40			1972	84306
		3.00			65.0	2.490	0.624	CT	1.263	0.25	20.40			1972	84306
		3.00			65.0	2.300	0.750	CT	---	0.60	32.00			1974	90011
		1.00			65.3	1.987	0.988	CT	1.093	0.32	23.70			1978	MPC01
		0.87			65.3	1.989	0.877	CT	1.074	0.28	22.50			1978	MPC01
		1.37			65.6	3.000	1.383	NB	1.500	0.31	23.20			1973	86213
		1.37			65.6	3.000	1.385	NB	1.480	0.37	25.20			1973	86213
		1.37			65.6	2.980	1.383	NB	1.490	0.27	22.20			1978	MPC01
		1.37			65.6	1.998	1.001	CT	1.059	0.30	23.20			1978	MPC01
		1.37			65.6	3.020	1.383	NB	1.480	0.27	21.80			1978	MPC01
		1.37			65.6	3.000	1.386	NB	1.545	0.31	23.20			1973	86213
		1.37			65.6	3.000	1.386	NB	1.531	0.33	23.70			1973	86213
		1.37			65.6	2.000	1.001	CT	1.048	0.30	22.80			1973	86213
		1.37			65.6	1.990	1.001	CT	0.975	0.28	22.50			1978	MPC01
		1.37			65.8	2.980	1.393	NB	1.490	0.34	25.00			1978	MPC01
		1.37			65.8	3.020	1.393	NB	1.510	0.36	25.40			1978	MPC01
		3.00			66.0	3.000	0.757	CT	1.526	0.35	24.30			1973	85836

TABLE 7.5.2.1 (CONTINUED)

ALUMINUM 2024 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi • √in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	R.T. Cont'd	L-T Cont'd	66.0	3.000	0.995	CT	1.533	0.32	23.50	Cont'd	Cont'd	1972	84306	
				66.0	3.000	0.994	CT	1.540	0.33	24.00			1972	84306	
				66.1	2.990	1.400	NB	1.525	0.25	21.80			1978	MPC01	
				66.1	3.008	1.401	NB	1.474	0.25	21.50			1978	MPC01	
				66.1	3.000	1.400	NB	1.536	0.28	22.10			1973	86213	
				66.1	1.502	0.761	CT	0.781	0.27	22.10			1978	MPC01	
				66.1	3.000	1.401	NB	1.445	0.25	20.90			1973	86213	
				66.2	1.508	0.616	CT	0.769	0.25	21.50			1978	MPC01	
				66.2	2.016	1.009	CT	1.149	0.25	21.50			1978	MPC01	
				66.5	2.000	1.020	NB	---	0.25	21.00			1974	90981	
				66.5	2.000	1.020	NB	---	0.24	20.40			1974	90981	
				67.0	1.500	0.709	CT	---	0.27	22.00			1982	NC003	
				67.0	1.500	0.709	CT	---	0.27	22.00			1982	NC003	
				67.1	1.500	0.518	CT	0.765	0.24	21.10			1978	MPC01	
				67.1	1.506	0.481	CT	0.768	0.24	20.90			1978	MPC01	
				67.1	1.000	0.375	CT	---	0.26	21.90			1974	90981	
				67.5	2.000	1.001	CT	1.018	0.35	25.20			1973	86429	
				67.5	1.980	1.000	CT	1.004	0.33	24.60			1973	86429	
				68.0	1.504	0.631	CT	0.767	0.28	23.60			1978	MPC01	
				70.1	1.500	0.750	CT	---	0.26	22.80			1974	90981	
				70.1	1.500	0.750	CT	---	0.25	22.00			1974	90981	
				70.1	1.500	0.750	CT	---	0.29	24.00			1974	90981	

TABLE 7.5.2.1 (CONTINUED)

ALUMINUM 2024 K _{1c}																
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	3.5 • (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi • √in.)	K _{1c} MEAN	STAN DEV			
T851	Plate	1.37	R.T.	T-S	65.4	0.996	0.500	CT	0.488	0.28	22.50	---	---	1978	MPC01	
		4.00	R.T.	T-L	61.5	2.000	1.020	NB	---	0.28	19.80	20.7			1974	90981
		4.00			61.5	2.000	1.020	NB	---	0.28	19.90				1974	90981
		3.00			63.5	1.500	0.750	CT	0.750	0.32	22.60				1972	83243
		3.00			63.5	1.500	0.750	CT	0.750	0.31	22.20				1972	83243
		3.00			63.5	1.500	0.750	CT	0.750	0.24	19.70				1972	83243
		3.00			64.0	2.000	0.620	CT	---	0.35	24.00				1974	90011
		3.00			64.0	2.490	0.624	CT	1.233	0.20	17.90				1972	84306
		3.00			64.0	3.000	1.000	CT	---	0.20	18.00				1974	90011
		3.00			64.0	2.000	0.750	CT	---	0.32	23.00				1974	90011
		3.00			64.0	2.000	0.750	CT	---	0.32	23.00				1974	90011
		3.00			64.0	2.500	0.625	CT	1.240	0.22	18.80				1972	84306
		3.00			64.0	2.500	0.750	CT	---	0.38	25.00				1974	90011
		3.00			64.0	2.500	0.750	CT	---	0.32	23.00				1974	90011
		3.00			64.0	2.000	0.620	CT	---	0.32	23.00				1974	90011
		3.00			64.0	2.500	0.626	CT	1.222	0.21	18.50				1972	84306
		3.00			64.0	2.000	0.750	CT	---	0.30	22.00				1974	90011
		1.38			64.4	2.000	1.000	NB	0.986	0.26	20.90				1972	82880
		1.37			64.4	3.020	1.384	NB	1.540	0.28	22.50				1978	MPC01
		1.37			64.4	3.002	1.384	NB	1.501	0.28	22.10				1978	MPC01
		1.37			64.4	3.020	1.383	NB	1.510	0.21	18.90				1978	MPC01
		1.39			64.4	3.000	1.387	NB	1.512	0.24	20.10				1971	84288
		1.38			64.4	1.500	0.750	NB	0.777	0.30	22.40				1972	82880

TABLE 7.5.2.1 (CONTINUED)

ALUMINUM 2024 K ₁₀															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₁₀ /TYS) ² (in.)	K ₁₀			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K ₁₀ (Ksi • √in.)	K ₁₀ MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	1.39	R.T. Cont'd	T-L Cont'd	64.4	3.000	1.390	NB	---	0.24	20.20	Cont'd	Cont'd	1972	82880
		1.39			64.4	3.000	1.390	NB	---	0.24	20.00			1972	82880
		1.37			64.4	2.980	1.383	NB	1.520	0.21	19.10			1978	MPC01
		1.37			64.4	3.021	1.383	NB	1.450	0.19	18.20			1978	MPC01
		1.38			64.4	1.000	0.500	NB	0.512	0.27	21.30			1972	82880
		1.38			64.4	1.000	0.500	NB	0.503	0.22	19.30			1972	82880
		1.38			64.4	2.000	1.000	NB	0.995	0.23	19.60			1972	82880
		1.39			64.4	3.000	1.388	NB	1.507	0.24	20.20			1971	84288
		1.39			64.4	3.000	1.380	NB	---	0.25	20.50			1972	82880
		1.37			64.4	3.020	1.383	NB	1.510	0.21	19.10			1978	MPC01
		1.39			64.4	3.000	1.385	NB	1.508	0.25	20.50			1971	84288
		1.38			64.4	1.000	0.500	NB	0.512	0.26	20.60			1972	82880
		1.38			64.4	2.000	1.000	NB	0.977	0.24	20.00			1972	82880
		4.00			64.6	2.000	1.020	NB	---	0.20	18.20			1974	90981
		4.00			64.6	2.000	1.020	NB	---	0.19	17.80			1974	90981
		1.37			64.8	2.000	1.000	CT	1.038	0.23	19.80			1973	86213
		1.37			64.8	2.000	1.000	CT	1.055	0.22	19.20			1973	86213
		1.37			64.8	2.000	1.000	CT	1.009	0.20	18.30			1973	86213
		1.37			65.0	3.002	1.392	NB	1.501	0.27	21.80			1978	MPC01
		3.00			65.0	2.500	1.245	CT	1.293	0.31	23.00			1973	86836
		1.37			65.0	2.978	1.392	NB	1.489	0.19	18.30			1978	MPC01
		1.37			65.0	3.024	1.392	NB	1.512	0.27	22.00			1978	MPC01

TABLE 7.5.2.1 (CONTINUED)

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ALUMINUM 2024 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /Y _S) ² (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi • √in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	3.00	R.T. Cont'd	T-L Cont'd	65.0	2.500	1.246	CT	1.293	0.31	23.00	Cont'd	Cont'd	1973	85836
		1.37			65.0	3.000	1.392	NB	1.565	0.23	19.80			1973	86213
		0.75			65.2	1.494	0.761	CT	0.792	0.21	19.10			1978	MPC01
		1.37			65.5	2.000	0.999	CT	1.097	0.21	19.10			1973	86213
		1.37			65.5	3.018	1.400	NB	1.539	0.22	20.20			1978	MPC01
		1.37			65.5	3.000	1.400	NB	1.520	0.23	19.80			1973	86213
		1.37			65.5	2.000	0.999	CT	1.065	0.19	18.20			1973	86213
		1.37			65.6	2.978	1.385	NB	1.489	0.36	25.40			1978	MPC01
		1.00			65.7	2.016	0.987	CT	1.109	0.24	21.00			1978	MPC01
		0.62			65.7	1.498	0.616	CT	0.779	0.19	18.90			1978	MPC01
		0.50			65.9	1.490	0.481	CT	0.760	0.21	19.30			1978	MPC01
		0.37			66.6	1.000	0.375	CT	---	0.29	22.70			1974	90981
		0.37			66.6	1.000	0.375	CT	---	0.28	22.10			1974	90981
		0.37			66.6	1.000	0.375	CT	---	0.32	23.80			1974	90981
		0.50			67.2	1.508	0.518	CT	0.784	0.21	19.50			1978	MPC01
		0.62			67.3	1.498	0.631	CT	0.794	0.22	20.20			1978	MPC01
		0.75			68.6	1.500	0.760	CT	---	0.25	21.80			1974	90981
		0.75			68.6	1.500	0.750	CT	---	0.25	21.90			1974	90981
		0.75			68.6	1.500	0.750	CT	---	0.26	22.00			1974	90981
T851	Plate	3.00	R.T.	S-T	64.0	2.500	0.750	CT	---	0.35	24.00	---	---	1974	90011
T851	Plate	1.37	82	L-T	65.6	2.000	1.001	CT	0.982	0.30	22.80	23.8	0.5	1973	86213
		1.37			65.6	2.000	1.002	CT	1.086	0.32	23.40			1973	86213

TABLE 7.5.2.1 (CONTINUED)

ALUMINUM 2024 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K ₀₁)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₀₁ /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K ₀₁ (K ₀₁ • √in.)	K ₀₁ MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	1.37	82 Cont'd	L-T Cont'd	65.6	2.000	1.001	CT	0.981	0.29	22.40	Cont'd	Cont'd	1973	86213
		1.37			65.6	2.000	1.002	CT	1.030	0.32	23.40			1973	86213
		1.37			65.6	2.000	1.001	CT	0.975	0.29	22.50			1973	86213
		1.37			65.6	2.000	1.002	CT	1.033	0.32	23.40			1973	86213
T851	Plate	1.37	82	T-L	64.4	2.000	0.999	CT	1.021	0.24	20.00	20.2	0.2	1973	86213
		1.37			64.4	2.000	1.000	CT	1.010	0.24	19.90			1973	86213
		1.37			64.4	2.000	1.000	CT	0.992	0.24	20.00			1973	86213
		1.37			64.8	2.000	1.001	CT	1.068	0.25	20.40			1973	86213
		1.37			64.8	2.000	1.000	CT	1.049	0.24	20.10			1973	86213
		1.37			64.8	2.000	1.002	CT	1.032	0.25	20.50			1973	86213
T851	Plate	1.75	84	L-T	65.0	2.990	1.007	CT	1.650	0.32	23.30	21.5	1.2	1972	84306
		1.00			68.9	1.500	0.750	CT	0.739	0.23	20.80			1973	86213
		1.00			68.9	1.500	0.750	CT	0.726	0.22	20.60			1973	86213
		1.00			68.9	1.500	0.750	CT	0.742	0.24	21.30			1973	86213
T851	Plate	1.00	84	T-L	67.6	1.490	0.749	CT	0.754	0.19	18.80	18.7	0.3	1973	86213
		1.00			67.6	1.500	0.750	CT	0.749	0.18	18.30			1973	86213
		1.00			67.6	1.500	0.750	CT	0.740	0.20	18.90			1973	86213
T851	Plate	1.37	86	L-S	65.8	1.000	0.500	CT	0.504	0.26	21.30	21.0	0.8	1973	86213
		1.37			65.8	1.000	0.500	CT	0.491	0.23	20.10			1973	86213
		1.37			65.8	1.000	0.500	CT	0.484	0.27	21.60			1973	86213
T851	Plate	1.37	86	T-S	65.4	1.000	0.500	CT	0.510	0.30	22.50	---	---	1973	86213

TABLE 7.5.2.1 (CONTINUED)

ALUMINUM 2024 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (KSI)	SPECIMEN			CRACK LENGTH (in.) A	3.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (KSI • √in.)	K _{1c} MEAN	STAN DEV		
T851	Plate	1.37	86	S-T	64.2	1.000	0.500	CT	0.511	0.18	17.00	16.2	0.7	1973	86213
		1.37			64.2	1.000	0.500	CT	0.499	0.15	15.70			1973	86213
		1.37			64.2	1.000	0.500	CT	0.510	0.16	16.00			1973	86213
T851	Plate	1.37	88	L-S	66.1	1.000	0.500	CT	0.513	0.29	22.40	22.9	0.7	1973	86213
		1.37			66.1	1.000	0.499	CT	0.493	0.31	23.40			1973	86213
		1.37			65.5	1.000	0.500	CT	0.511	0.25	20.80			1973	86213
T851	Plate	1.37	88	T-S	65.5	1.000	0.500	CT	0.515	0.24	20.40	20.6	0.2	1973	86213
		1.37			65.5	1.000	0.500	CT	0.496	0.25	20.60			1973	86213
		1.37			64.1	1.000	0.500	CT	0.479	0.15	15.80			1973	86213
T851	Plate	1.37	88	S-T	64.1	1.000	0.500	CT	0.502	0.15	15.90	15.8	0.1	1973	86213
		1.37			64.1	1.000	0.500	CT	0.480	0.15	15.80			1973	86213
		1.37			64.1	1.000	0.501	CT	0.506	0.18	17.20			1973	86213
T851	Plate	1.37	88	S-L	64.1	1.000	0.501	CT	0.478	0.15	15.60	16.4	0.8	1973	86213
		1.37			64.1	1.000	0.500	CT	0.496	0.16	16.30			1973	86213
		3.00			56.4	1.500	0.750	CT	0.750	0.75	30.90			1972	83243
T851	Plate	3.00	200	L-S	56.4	1.500	0.750	CT	0.750	0.70	29.70	30.3	0.8	1972	83243
		3.00			58.6	1.500	0.750	CT	0.750	0.49	25.90			1972	83243
		3.00			58.6	1.500	0.750	CT	0.750	0.56	27.80			1972	83243
T851	Plate	3.00	200	L-T	58.6	1.500	0.750	CT	0.750	0.52	26.80	26.8	1.0	1972	83243
		3.00			58.6	1.500	0.750	CT	0.750	0.52	26.80			1972	83243
		3.00			58.3	1.500	0.750	CT	0.750	0.32	20.70			1972	83243
T851	Plate	3.00	200	T-L	58.3	1.500	0.750	CT	0.750	0.38	22.80	21.8	1.1	1972	83243
		3.00			58.3	1.500	0.750	CT	0.750	0.35	21.80			1972	83243
		3.00			58.3	1.500	0.750	CT	0.750	0.35	21.80			1972	83243

TABLE 7.5.2.1 (CONTINUED)

ALUMINUM 2024 K_{10}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	$2.5 \cdot (K_{10} IVS)^2$ (in.)	K_{10}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K_{10} (Ksi) $\sqrt{in.}$	K_{10} MEAN	STAN DEV		
T851	Plate	3.00	300	L-T	54.9	1.500	0.750	CT	0.750	0.60	26.80	26.9	0.4	1972	83243
		3.00			54.9	1.500	0.750	CT	0.750	0.62	27.30			1972	83243
		3.00			54.9	1.500	0.750	CT	0.750	0.59	26.60			1972	83243
T851	Plate	3.00	300	T-L	54.1	1.500	0.750	CT	0.750	0.40	21.70	22.0	0.4	1972	83243
		3.00			54.1	1.500	0.750	CT	0.750	0.42	22.30			1972	83243
T8510	Extrusion	4.50	R.T.	L-T	58.5	4.023	2.000	CT	2.132	0.78	33.10	30.4	2.7	1978	MPC01
		4.00			61.8	3.981	1.858	CT	2.110	0.57	30.20			1978	MPC01
		2.76			63.2	4.018	2.000	CT	2.009	0.46	27.80			1978	MPC01
T8510	Extrusion	4.50	R.T.	T-L	58.9	5.042	2.500	CT	2.622	0.21	17.50	16.5	1.0	1978	MPC01
		4.00			60.5	5.054	2.499	CT	2.527	0.16	16.30			1978	MPC01
		2.76			61.8	4.018	1.999	CT	2.049	0.15	15.60			1978	MPC01
T8510	Extrusion	4.50	R.T.	S-L	56.6	3.022	1.500	CT	1.541	0.21	16.50	15.7	1.4	1978	MPC01
		4.00			58.2	2.998	1.498	CT	1.529	0.19	16.50			1978	MPC01
		2.76			59.5	2.018	0.999	CT	0.989	0.13	14.10			1978	MPC01
T8511	Extrusion	3.50	R.T.	L-T	66.5	1.996	1.000	CT	0.978	0.32	24.40	24.1	0.4	1978	MPC01
		3.50			66.5	2.004	1.000	CT	0.982	0.30	23.80			1978	MPC01
T8511	Extrusion	3.50	R.T.	T-L	61.8	2.015	1.000	CT	1.048	0.15	16.00	16.0	0.0	1978	MPC01
		3.50			61.8	1.980	1.000	CT	1.010	0.15	16.00			1978	MPC01
T8511	Extrusion	3.50	R.T.	S-T	61.6	2.014	1.001	CT	1.007	0.18	17.10	16.7	0.6	1978	MPC01
		3.50			61.6	2.014	1.001	CT	1.007	0.16	16.30			1978	MPC01

TABLE 7.5.2.1 (CONTINUED)

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ALUMINUM 2024 K _{IC}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (KSI)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{IC} /TYS) ^a (in.)	K _{IC}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{IC} (KSI • √in.)	K _{IC} MEAN	STAN DEV		
T852	Forging	5.00	R.T.	L-T	55.1	3.000	1.504	NB	1.542	0.66	28.30	29.2	5.2	1970	77720
		5.00			55.1	3.000	1.502	NB	1.400	0.56	26.10			1970	77720
		5.00			55.1	3.000	1.503	NB	1.395	0.60	27.00			1970	77720
		6.00			56.1	4.000	2.001	NB	2.008	0.76	30.80			1970	77720
		6.00			56.1	4.000	2.002	NB	2.202	0.75	30.80			1970	77720
		6.00			56.1	4.000	1.999	NB	1.925	0.63	28.20			1970	77720
		3.00			58.0	2.490	1.250	CT	1.279	0.55	27.20			1973	85836
		3.00			58.0	2.500	1.254	CT	1.324	0.71	30.90			1973	85836
		5.00			58.0	2.500	1.252	CT	1.295	0.99	36.50			1973	85836
		3.00			58.0	2.490	1.247	CT	1.251	0.48	25.50			1973	85836
		5.00			58.0	2.500	1.252	CT	1.302	1.02	37.10			1973	85836
		5.00			60.0	2.500	1.004	CT	1.265	0.99	37.80			1973	85836
		2.00			64.6	1.500	0.752	NB	0.707	0.30	22.60			1970	77720
		2.00			64.6	1.500	0.752	NB	0.667	0.36	24.30			1970	77720
		2.00			64.6	1.500	0.751	NB	0.770	0.40	25.90			1970	77720
		3.00			65.0	2.500	1.250	CT	...	0.77	36.00			1974	90011
		3.00			65.0	2.500	1.250	CT	...	0.81	37.00			1974	90011
		3.00			65.0	2.500	1.250	CT	...	0.81	37.00			1974	90011
		4.00			65.4	3.000	1.500	NB	1.482	0.36	25.00			1970	77720
		4.00			65.4	3.000	1.500	NB	1.445	0.49	28.90			1970	77720
		4.00			65.4	3.000	1.502	NB	1.645	0.46	28.10			1970	77720
		3.00			66.7	1.990	1.000	NB	0.935	0.34	24.60			1970	77720
		3.00			66.7	2.000	1.000	NB	0.950	0.27	21.90			1970	77720
		3.00			66.7	2.000	0.999	NB	0.940	0.29	22.60			1970	77720

TABLE 7.5.2.1 (CONTINUED)

ALUMINUM 2024 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	3.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi • √in.)	K _{1c} MEAN	STAN DEV		
T852	Forging	5.00	R.T.	T-L	56.7	3.000	1.500	NB	1.422	0.23	17.30	18.9	2.6	1970	77720
		5.00			56.7	3.000	1.502	NB	1.507	0.25	17.80			1970	77720
		5.00			56.7	3.000	1.501	NB	1.553	0.24	17.60			1970	77720
		6.00			57.8	4.000	2.005	NB	2.005	0.17	15.10			1970	77720
		6.00			57.8	3.990	2.003	NB	2.035	0.25	18.20			1973	86213
		6.00			57.8	3.990	2.003	NB	2.035	0.25	18.10			1970	77720
		6.00			57.8	4.000	2.005	NB	2.005	0.17	15.20			1973	86213
		3.00			58.0	2.000	1.000	CT	---	0.30	20.00			1974	90011
		3.00			58.0	2.000	1.000	CT	---	0.33	21.00			1974	90011
		3.00			58.0	2.000	1.000	CT	---	0.33	21.00			1974	90011
		2.00			63.8	1.500	0.752	NB	0.667	0.35	24.10			1970	77720
		2.00			63.8	1.500	0.754	NB	0.697	0.34	23.50			1970	77720
		2.00			63.8	1.500	0.749	NB	0.763	0.24	19.80			1970	77720
		3.00			69.0	2.000	1.000	NB	0.905	0.20	19.40			1970	77720
		3.00			69.0	2.000	1.001	NB	1.020	0.15	16.90			1970	77720
		3.00			69.0	1.990	0.999	NB	1.010	0.15	16.70			1970	77720
T852	Forging	6.00	R.T.	S-T	53.9	1.400	0.700	NB	0.700	0.27	17.70	17.6	0.1	1972	82675
		6.00			53.9	1.400	0.700	NB	0.700	0.26	17.50			1972	82675
T852	Forging	6.00	R.T.	S-L	53.9	1.000	0.500	NB	0.512	0.23	16.40	15.9	0.8	1970	77720
		6.00			53.9	1.000	0.500	NB	0.505	0.19	14.80			1970	77720
		6.00			53.9	1.000	0.500	NB	0.507	0.26	17.30			1970	77720
		5.00			54.5	1.000	0.500	NB	0.490	0.22	16.00			1970	77720
		5.00			54.5	1.000	0.500	NB	0.473	0.21	15.80			1970	77720
		4.00			60.6	0.500	0.250	NB	0.267	0.15	15.00			1970	77720

TABLE 7.5.2.1 (CONCLUDED)

ALUMINUM 2024 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi • √in.)	K _{1c} MEAN	STAN DEV		
T852 Cont'd	Forging Cont'd	4.00	R.T. Cont'd	S-L Cont'd	60.6	0.500	0.250	NB	0.272	0.17	15.80	Cont'd	Cont'd	1970	77720
		4.00			0.500	0.250	NB	0.258	0.18	16.10	1970			77720	
T852	Forging	7.00	82	L-T	49.5	1.500	0.751	CT	0.706	0.70	26.20	23.0	4.6	1973	86213
		7.00			58.6	1.490	0.758	CT	0.719	0.28	19.70			1973	86213
T852	Forging	7.00	82	T-L	59.0	1.500	0.750	CT	0.719	0.47	25.50	---	---	1973	86213
T852	Forging	7.00	83	L-T	58.6	1.500	0.753	CT	0.720	0.27	19.30	---	---	1973	86213
T852	Forging	7.00	83	T-L	53.2	1.500	0.754	CT	0.757	0.39	21.00	19.1	2.7	1973	86213
		7.00			59.5	1.500	0.753	CT	0.767	0.21	17.20			1973	86213
T852	Forging	7.00			50.1	1.000	0.506	CT	0.495	0.40	20.00	18.5	1.4	1973	86213
		7.00			50.5	1.000	0.499	CT	0.481	0.32	18.00			1973	86213
		7.00			57.2	1.000	0.505	CT	0.494	0.23	17.40			1973	86213
T852	Forging	4.75	84	L-S	64.4	2.000	0.997	CT	0.923	0.41	26.20	---	---	1973	86213
T852	Forging	5.00	84	L-T	61.9	1.490	0.750	CT	0.735	0.31	21.80	22.7	1.3	1973	86213
		4.75			64.4	2.000	0.999	CT	1.061	0.34	23.60			1973	86213
T852	Forging	4.75	84	T-S	65.2	2.000	0.997	CT	0.937	0.14	15.20	---	---	1973	86213
T852	Forging	5.00	84	T-L	62.9	1.490	0.750	CT	0.752	0.15	15.40	---	---	1973	86213
T852	Forging	5.00	84	S-T	57.6	0.990	0.501	CT	0.542	0.23	17.60	---	---	1973	86213
T852	Forging	4.75	84	S-L	60.9	2.000	0.997	CT	0.946	0.17	16.10	---	---	1973	86213
T852	Forging	3.00	265	L-T	---	2.500	1.250	CT	---	---	31.00	35.0	5.6	1974	90011
		5.00			65.0	2.490	1.248	CT	1.485	0.90	38.90			1973	86210
T852	Forging	3.00	265	T-L	---	2.500	1.250	CT	---	---	24.00	---	---	1974	90011

TABLE 7.5.2.2

ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _o	FINAL (in.) 2a _y	ONSET (Ksi) σ _s	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																			
T3	Sheet	0.12	R.T.	L-T	53.8	4.000	0.122	2.390	3.100	---	20.30	51.17*	---	---	76.14*	---	---	1970	78982
		0.12			53.8	4.000	0.123	1.190	1.800	---	35.20	50.93*			67.88*			1970	78982
		0.12			53.8	4.000	0.123	2.340	2.900	---	20.50	50.46*			67.62*			1970	78982
		0.12			53.8	4.000	0.123	0.390	1.000	---	46.00	36.22*			59.98*			1970	78982
		0.12			53.8	4.000	0.123	2.400	---	---	44.90	113.71*			---			1970	78982
		0.12			53.8	4.000	0.123	1.200	1.900	---	36.60	53.23*			73.79*			1970	78982
T3	Sheet	0.04	R.T.	L-T	50.6	6.450	0.040	2.650	---	---	26.70	60.95*	---	---	---	---	---	1966	86734
		0.04			50.6	6.450	0.040	3.900	---	---	16.90	54.84*			---			1966	86734
		0.04			50.6	6.450	0.040	2.820	---	---	26.30	62.95*			---			1966	86734
T3	Sheet	0.05	R.T.	L-T	52.7	8.000	0.049	4.770	5.750	17.10	19.20	68.27*	---	---	88.25*	---	---	1970	78982
		0.05			52.7	8.000	0.051	2.660	3.600	19.10	31.30	68.73*			85.36*			1970	78982
T3	Sheet	0.12	R.T.	L-T	53.8	8.000	0.123	4.700	4.900	---	20.50	71.70*	---	---	75.21*	---	---	1970	78982
		0.12			53.8	8.000	0.123	0.800	1.900	---	46.40	52.34*			83.07*			1970	78982
		0.12			53.8	8.000	0.123	4.740	5.260	---	19.60	69.20*			78.70*			1970	78982
		0.12			53.8	8.000	0.123	0.800	2.000	---	46.40	52.34*			85.56*			1970	78982
		0.12			53.8	8.000	0.124	2.600	3.300	---	34.30	74.21*			87.46*			1970	78982
		0.12			51.7	9.700	0.040	3.980	---	---	29.60	79.98*			---			1966	86734
T3	Sheet	0.06	R.T.	L-T	51.9	12.000	0.063	4.720	5.420	24.40	27.70	83.54*	---	---	92.79*	---	---	1966	67821
		0.06			51.9	12.000	0.063	3.060	3.810	23.30	33.20	76.14*			86.67*			1966	67821

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																			
T3	Sheet	0.03	R.T.	L-T	52.0	20.000	0.032	5.260	7.070	20.00	27.60	82.90	83.5	0.8	99.78*	---	---	1966	67821
		0.03			52.0	20.000	0.032	3.450	4.860	22.80	36.40	86.33*			104.40*			1966	67821
		0.03			52.0	20.000	0.032	1.120	2.060	43.10	47.00	62.46*			85.10*			1966	67821
		0.03			52.0	20.000	0.032	7.460	9.500	16.30	22.40	84.00			100.98*			1966	67821
		0.03			52.0	20.000	0.032	0.640	1.200	47.60	48.60	48.66*			66.74*			1966	67821
T3	Sheet	0.06	R.T.	L-T	51.9	20.000	0.063	7.200	13.600	23.20	23.20	84.91	83.4	2.1	152.84*	---	---	1966	67821
		0.06			51.9	20.000	0.063	3.270	5.030	19.20	37.70	86.88*			110.30*			1966	67821
		0.06			51.9	20.000	0.063	4.930	6.900	25.60	32.20	93.12*			114.53*			1966	67821
		0.06			51.9	20.000	0.063	4.310	7.770	26.70	30.60	81.98			118.90*			1966	67821
		0.06			51.9	20.000	0.063	0.960	2.600	38.50	43.60	53.62*			89.04*			1966	67821
T3	Sheet	0.06	R.T.	L-T	51.9	20.000	0.063	0.870	2.200	43.60	43.60	51.03*	85.6	6.4	81.66*	---	---	1966	67821
		0.08			53.3	20.000	0.080	7.350	8.960	20.80	24.80	92.05			106.46*			1966	67821
		0.08			53.3	20.000	0.080	0.700	1.440	51.90	51.80	54.36*			78.16*			1966	67821
		0.08			53.3	20.000	0.080	5.090	6.450	21.30	29.00	85.44			98.71*			1966	67821
		0.08			53.3	20.000	0.080	3.310	4.960	29.20	34.20	79.33			99.14*			1966	67821
T3	Sheet	0.08	R.T.	L-T	53.3	20.000	0.080	1.270	1.900	46.46	48.00	67.96*	99.5	2.5	83.39*	---	---	1966	67821
		0.05			52.7	24.000	0.049	7.000	13.500	17.00	27.60	96.64			159.57*			1970	78982
		0.05			52.7	24.000	0.049	7.160	11.000	16.20	28.30	100.48			135.67*			1970	78982

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _G																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _G			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _i	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _G (Ksi√in)	K _G MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																			
T3 Cont'd	Sheet Cont'd	0.05	R.T. Cont'd	L-T Cont'd	52.7	24.000	0.049	14.27	18.000	12.70	16.50	101.30	Cont'd	Cont'd	141.83*	Cont'd	Cont'd	1970	78982
		0.05				24.000	0.049	2.320	7.400	34.00	42.20	81.03*			152.94*			1970	78982
T3	Sheet	0.12	R.T.	L-T	53.8	24.000	0.123	7.650	11.600	---	29.20	108.07	93.9	11.1	146.35*	---	---	1970	78982
		0.12				24.000	0.123	6.220	11.800	---	28.00	91.33			142.43*			1970	78982
		0.12				24.000	0.123	2.400	3.250	---	44.60	87.13*			101.93*			1970	78982
		0.12				24.000	0.123	2.400	4.400	---	44.60	87.13*			119.74*			1970	78982
		0.12				24.000	0.123	14.35	16.200	---	15.40	95.15			111.14*			1970	78982
		0.12				24.000	0.123	14.39	17.800	---	13.10	81.20			110.25*			1970	78982
T3	Sheet	0.06	R.T.	L-T	51.9	30.000	0.063	3.670	6.710	27.50	39.70	96.21*	87.3	4.9	133.01*	108.9	8.2	1966	67821
		0.06				30.000	0.063	10.86	14.400	17.60	18.20	81.89			101.38			1966	67821
		0.06				30.000	0.063	7.130	10.710	19.80	26.40	91.56			117.67			1966	67821
		0.06				30.000	0.063	5.730	8.080	22.00	28.80	88.40			107.53			1966	67821
T3	Sheet	0.06	R.T.	T-L	43.4	6.000	0.060	2.000	2.350	---	30.25	57.62*	---	---	64.31*	---	---	1966	86734
T3	Sheet	0.06	R.T.	T-L	43.4	9.000	0.060	3.000	3.600	---	30.50	71.15*	---	---	80.64*	---	---	1966	86734
T3	Sheet	0.06	R.T.	T-L	43.4	15.000	0.060	5.000	5.800	---	28.00	84.32*	---	---	93.27*	---	---	1966	86734
T3	Sheet	0.06	R.T.	T-L	43.4	18.000	0.060	6.000	7.200	---	27.50	90.72*	---	---	102.82*	---	---	1966	86734
T3	Sheet	0.06	R.T.	T-L	43.4	21.000	0.060	7.000	8.600	---	27.40	97.63*	---	---	112.58*	---	---	1966	86734
T3	Sheet	0.06	R.T.	T-L	43.4	24.000	0.060	8.000	9.600	---	26.70	101.71*	---	---	115.27*	---	---	1966	86734

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

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ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _y	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																			
T3	Sheet	0.08	R.T.	T-L	46.8	48.000	0.080	24.00	28.420	---	18.30	133.62	134.7	1.5	158.14*	---	---	1962	62308
		0.08				48.010	0.080	24.00	28.390	---	18.60	135.80			160.52*			1962	62308
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T3	Sheet	0.06	R.T.	L-T	55.5	2.000	0.061	0.621	0.800	---	39.30	41.26*	---	---	48.98*	---	---	1973	86213
		0.06				2.000	0.061	0.624	1.030	35.90	38.90	41.00*			59.56*			1973	86213
		0.06				2.000	0.061	0.622	0.960	35.40	38.80	40.81*			55.80*			1973	86213
		0.06				2.000	0.063	0.624	0.870	30.10	36.20	38.16*			48.06*			1973	86213
		0.06				2.000	0.063	0.626	0.920	32.40	36.20	38.23*			50.25*			1973	86213
		0.06				2.000	0.063	0.626	0.900	---	36.30	38.34*			49.50*			1973	86213
		0.06				2.000	0.064	0.621	1.000	---	36.10	37.90*			53.80*			1973	86213
		0.09				3.000	0.092	1.190	1.992	---	30.50	46.27*			76.02*			1973	86213
T3	Sheet	0.09	R.T.	L-T	51.1	3.000	0.092	1.240	2.215	---	29.90	46.76*	---	---	88.16*	---	---	1973	86213
		0.09				3.000	0.092	1.210	2.002	---	30.30	46.53*			76.06*			1973	86213
		0.12				3.000	0.124	1.143	2.080	17.10	32.40	47.73*			86.04*			1973	86213
T3	Sheet	0.12	R.T.	L-T	53.7	3.000	0.124	1.123	1.940	19.90	33.30	48.46*	---	---	80.08*	---	---	1973	86213
		0.12				3.000	0.124	1.223	2.040	17.40	31.20	48.26*			80.47*			1973	86213
		0.12				3.000	0.125	1.167	1.830	16.30	32.30	48.29*			72.22*			1973	86213
		0.12				3.000	0.126	1.190	1.790	15.00	31.60	47.94*			68.87*			1973	86213
		0.12				3.000	0.127	1.140	1.760	15.70	33.10	48.70*			70.78*			1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _e	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T3 Cont'd	Sheet Cont'd	0.12	R.T. Cont'd	L-T Cont'd	55.8	3.000	0.129	1.165	1.780	16.70	32.30	48.23*	Cont'd	Cont'd	69.95*	Cont'd	Cont'd	1973	86213
		0.12			55.8	3.000	0.130	1.150	1.800	17.80	32.50	48.12*			71.28*			86213	
		0.12			55.8	3.000	0.130	1.257	1.840	15.10	29.70	46.89*			66.84*			86213	
T3	Sheet	0.16	R.T.	L-T	50.4	3.000	0.160	1.140	1.780	15.90	31.10	45.76*	---	---	67.35*	---	---	1973	86213
		0.16			50.4	3.000	0.161	1.163	1.820	16.90	30.40	45.34*			67.53*			86213	
		0.16			50.4	3.000	0.162	1.162	1.850	17.80	30.50	45.49*			69.08*			86213	
		0.16			50.6	3.000	0.163	1.163	1.780	17.70	30.50	45.49*			66.05*			86213	
		0.16			50.6	3.000	0.163	1.150	1.760	17.20	31.20	46.19*			66.72*			86213	
		0.16			50.6	3.000	0.163	1.255	1.710	15.70	28.70	45.26*			59.49*			86213	
		0.16			53.8	3.000	0.163	1.162	1.810	16.10	32.10	47.88*			70.85*			86213	
T3	Sheet	0.16	R.T.	L-T	53.8	3.000	0.163	1.140	1.840	16.60	32.80	48.26*	---	---	73.81*	---	---	1973	86213
		0.16			53.8	3.000	0.164	1.127	1.800	17.10	33.10	48.28*			72.60*			86213	
		0.12			56.0	4.000	0.125	1.645	2.749	---	31.40	56.46*			94.95*			86213	
T3	Sheet	0.12	R.T.	L-T	56.9	4.000	0.125	1.627	2.678	---	31.50	56.18*	---	---	91.72*	---	---	1973	86213
		0.08			52.7	12.000	0.081	2.430	---	---	43.20	86.60*			---			84367	
		0.08			52.7	12.000	0.081	2.960	---	---	41.40	92.77*			---			84367	
		0.08			52.7	12.000	0.081	2.910	---	---	43.10	95.64*			---			84367	
		0.08			52.7	12.000	0.081	2.980	---	---	44.30	99.66*			---			84367	
		0.08			52.7	12.000	0.081	4.830	---	---	28.80	88.32*			---			84367	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _i	MAX (Ksi) σ _{max}	K _{app} (Ksi√in.)	K _{app} MEAN	STAN DEV	K _C (Ksi√in.)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T3 Cont'd	Sheet Cont'd	0.08			52.7	12.000	0.081	3.180	--	--	39.70	92.78*	Cont'd	Cont'd	Cont'd	--	Cont'd	--	1956	84367
		0.08			52.7	12.000	0.081	4.740	--	--	26.80	81.07*				--		1956	84367	
		0.08			52.7	12.000	0.081	4.950	--	--	17.60	86.19*				--		1956	84367	
		0.08			52.7	12.000	0.081	1.330	--	--	51.70	75.30*				--		1956	84367	
		0.08			52.7	12.000	0.081	4.820	--	--	27.90	85.43*				--		1956	84367	
		0.08			52.7	12.000	0.081	1.280	--	--	50.90	72.69*				--		1956	84367	
T3	Sheet	0.06			51.6	15.800	0.062	3.990	6.080	--	32.20	83.94*	Cont'd	Cont'd	Cont'd	109.70*	Cont'd	109.70*	1973	86213
		0.06			51.6	15.820	0.062	1.010	1.440	--	49.80	62.88*				75.28*		1973	86213	
		0.06			51.6	15.810	0.063	3.010	4.260	--	37.10	82.52*				100.51*		1973	86213	
		0.06			51.6	15.810	0.063	6.010	7.080	--	24.20	81.77				92.41*		1973	86213	
T3	Sheet	0.16			50.8	29.990	0.163	15.00	18.360	--	20.70	119.51*	Cont'd	Cont'd	Cont'd	146.96*	Cont'd	146.96*	1962	62308
0.16			50.8	30.010	0.163	15.00	18.880	--	20.60	118.90*	151.24*	1962				62308				
T3	Plate	0.50	R.T.	L-T	54.8	8.000	0.500	2.600	2.770	21.00	30.60	66.20*	Cont'd	Cont'd	Cont'd	69.00*	Cont'd	69.00*	1970	78982
T3	Plate	0.50			54.8	7.960	0.509	4.820	5.000	12.80	18.00	64.99*	Cont'd	Cont'd	Cont'd	67.93*	Cont'd	67.93*	1970	78982
		0.50	R.T.	L-T	54.8	8.050	0.509	4.850	4.900	13.20	18.00	64.98*				65.76*		1970	78982	
T3	Plate	0.25			53.6	15.000	0.253	7.500	11.260	--	21.30	86.94	Cont'd	Cont'd	Cont'd	144.74*	Cont'd	144.74*	1966	86734
		0.25	R.T.	L-T	53.6	15.000	0.255	7.500	11.440	--	21.50	87.76*				151.02*		1966	86734	
T3	Plate	0.50			55.4	15.000	0.515	7.500	10.420	--	18.70	76.33	Cont'd	Cont'd	Cont'd	111.37*	Cont'd	111.37*	1966	86734
		0.50	R.T.	L-T	55.4	15.000	0.517	7.500	10.080	--	18.70	76.33				106.01*		1966	86734	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T3	Plate	0.50	R.T.	L-T	54.8	24.000	0.509	7.250	12.000	17.20	26.80	95.89	95.9	2.4	138.37*	---	---	1970	78982
		0.50			54.8	24.150	0.509	7.200	11.500	18.50	27.60	98.26						137.01*	78982
		0.50			54.8	24.150	0.509	14.10	17.400	---	15.50	93.54						124.29*	78982
		0.50			54.8	24.150	0.509	2.300	4.800	25.70	42.80	81.81*						120.47*	78982
T3	Sheet	0.06	R.T.	T-L	47.8	2.000	0.061	0.621	1.040	34.40	35.20	36.95*	---	---	---	---	1973	86213	
		0.06			47.8	2.000	0.061	0.623	0.900	---	35.40	37.24*					48.27*	86213	
		0.06			47.8	2.000	0.062	0.625	1.050	28.00	34.70	36.57*					54.09*	86213	
		0.06			44.4	2.000	0.063	0.626	1.030	28.30	34.10	36.01*					52.21*	86213	
		0.06			44.4	2.000	0.064	0.625	1.080	32.30	33.20	34.99*					53.17*	86213	
		0.06			46.2	2.000	0.064	0.620	0.980	---	33.90	35.59*					49.63*	86213	
T3	Sheet	0.09	R.T.	T-L	45.3	3.000	0.092	1.220	2.372	---	28.00	43.26*	---	---	---	1973	86213		
		0.09			45.3	3.000	0.093	1.190	2.480	---	28.70	43.54*				109.23*	86213		
		0.09			45.3	3.000	0.093	1.200	2.336	---	28.60	43.66*				93.86*	86213		
T3	Sheet	0.12	R.T.	T-L	45.7	3.000	0.124	1.130	2.250	15.20	30.50	44.60*	---	---	---	1973	86213		
		0.12			45.7	3.000	0.124	1.178	---	16.60	29.30	44.13*				---	86213		
		0.12			45.7	3.000	0.124	1.148	---	16.90	29.80	44.06*				---	86213		
		0.12			46.0	3.000	0.127	1.180	2.250	14.80	28.50	42.98*				---	86213		
		0.12			46.0	3.000	0.127	1.233	2.200	13.70	27.70	43.11*				86.61*	86213		
		0.12			46.0	3.000	0.128	1.137	2.160	15.00	29.50	43.30*				80.74*	86213		

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

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2024

ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _e	MAX (Ksi) σ _{max}	K _{app} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi/in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T3 Cont'd	Sheet Cont'd	0.12	R.T.	T-L	48.1	3.000	0.129	1.110	2.190	17.10	30.10	43.47*	Cont'd	Cont'd	87.03*	Cont'd	Cont'd	1973	86213
		0.12	Cont'd	Cont'd	48.1	3.000	0.129	1.107	2.110	16.90	30.10	43.37*	Cont'd	Cont'd	81.75*	Cont'd	Cont'd	1973	86213
		0.16			43.2	3.000	0.161	1.183	2.110	14.70	27.50	41.52*			74.69*			1973	86213
		0.16			43.2	3.000	0.161	1.260	2.120	15.50	26.00	41.15*			71.15*			1973	86213
		0.16			43.2	3.000	0.162	1.160	2.060	15.20	27.40	40.82*			71.18*			1973	86213
T3	Sheet	0.16	R.T.	T-L	43.5	3.000	0.162	1.137	2.090	14.40	28.10	41.24*			75.18*			1973	86213
		0.16			43.5	3.000	0.162	1.202	2.110	15.90	27.00	41.26*			73.33*			1973	86213
		0.16			43.5	3.000	0.162	1.242	2.070	14.20	26.10	40.86*			68.80*			1973	86213
		0.16			45.6	3.000	0.162	1.255	2.240	15.60	27.70	43.88*			83.47*			1973	86213
		0.16			45.6	3.000	0.162	1.117	2.110	16.90	30.30	43.93*			82.29*			1973	86213
T3	Sheet	0.16			45.6	3.000	0.162	1.130	2.160	15.70	30.20	44.16*			85.25*			1973	86213
		0.06			46.0	15.810	0.063	4.000	---	---	29.10	75.96*			---			1973	86213
		0.06	R.T.	T-L	46.0	15.810	0.064	3.010	4.110	---	32.80	72.96*			86.99*			1973	86213
		0.06			46.0	15.810	0.064	6.010	---	---	22.50	76.02			---			1973	86213
		0.06			46.0	15.820	0.064	1.020	1.780	---	43.00	54.57*			72.47*			1973	86213
T3	Sheet	0.06			44.0	24.000	0.063	8.000	9.600	---	28.40	108.18*			122.61*			1966	86734
		0.06	R.T.	T-L	44.0	24.000	0.063	8.000	9.600	---	27.20	103.61*			117.43*			1966	86734
		0.06			44.0	24.000	0.063	8.000	9.600	---	27.90	106.28*			120.45*			1966	86734
		0.06			44.0	24.000	0.063	8.000	9.600	---	27.80	105.90*			120.02*			1966	86734

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _o	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T3	Sheet	0.16	R.T.	T-L	45.4	30.000	0.164	15.00	18.900	---	18.20	105.06*	---	---	133.83*	---	---	---	1966	86734
		0.16			45.4	30.000	0.165	15.00	18.450	---	18.20	105.06*	---	---	129.94*	---	---	---	1966	86734
T3	Plate	0.25	R.T.	T-L	47.3	15.000	0.254	7.500	9.650	---	19.30	78.78*	---	---	103.08*	---	---	---	1966	86734
		0.25			47.3	15.000	0.255	7.500	9.950	---	19.40	79.19*	---	---	107.98*	---	---	---	1966	86734
T3	Plate	0.50	R.T.	T-L	49.2	15.000	0.516	7.500	10.350	---	15.70	64.08	65.1	1.4	92.54*	---	---	---	1966	86734
		0.50			49.2	15.000	0.519	7.500	10.400	---	16.20	66.12	---	---	96.20*	---	---	---	1966	86734
T3	Sheet	0.09	84	T-L	44.3	16.000	0.095	4.000	6.420	18.10	29.80	77.71*	---	---	105.29*	---	---	---	1973	86213
		0.09			44.3	16.000	0.095	4.000	6.530	15.80	29.30	76.41*	---	---	104.82*	---	---	---	1973	86213
T351	Plate	0.25	R.T.	L-T	55.4	4.000	0.246	1.733	2.627	---	29.00	54.25*	---	---	82.17*	---	---	---	1973	86213
		0.25			55.8	4.000	0.247	1.727	2.706	---	29.80	55.60*	---	---	88.08*	---	---	---	1973	86213
T351	Plate	0.50	R.T.	L-T	49.0	4.000	0.498	1.789	---	---	28.00	53.70*	---	---	---	---	---	---	1966	86734
		0.50			49.0	4.000	0.503	1.880	---	---	28.00	55.95*	---	---	---	---	---	---	1966	86734
		0.50			54.0	4.000	0.507	1.673	---	15.80	30.30	55.17*	---	---	---	---	---	---	1973	86213
		0.50			54.3	4.000	0.508	1.653	---	15.70	30.70	55.40*	---	---	---	---	---	1973	86213	
T351	Plate	0.50	R.T.	L-T	49.0	12.000	0.441	7.750	---	---	18.00	86.42*	---	---	---	---	---	1966	86734	
		0.50			49.0	12.000	0.444	5.000	---	---	29.10	91.56*	---	---	---	---	---	1966	86734	
		0.50			49.0	12.000	0.448	9.620	---	---	9.00	63.19*	---	---	---	---	---	1966	86734	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in.)	K _{app} MEAN	STAN DEV	K _C (Ksi√in.)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T351	Plate	1.00			58.2	20.000	1.023	4.850	7.550	---	28.00	80.21			105.89				1973	86213
		1.00	R.T.	L-T	58.2	20.000	1.023	2.610	6.250	---	35.60	72.85			118.78*		107.1	1.8	1973	86213
		1.00			58.2	20.000	1.023	7.000	10.000	---	23.00	82.59			108.40			1973	86213	
T351	Plate	0.25	R.T.	T-L	47.1	4.000	0.255	1.790	2.500	---	23.80	45.69*			63.28*				1973	86213
		0.25			47.1	4.000	0.255	1.860	2.240	---	22.90	45.35*	---			53.80*	---		1973	86213
T351	Plate	0.50	R.T.	T-L	48.6	14.970	0.507	4.970	7.900	---	23.80	71.41			102.00*				1973	86213
		0.50			48.6	15.000	0.507	5.000	8.600	---	23.50	70.77	71.1	0.5	---	109.59*	---		1973	86213
T351	Plate	1.00	R.T.	T-L	52.0	20.000	1.023	4.850	8.500	---	24.00	68.75			98.96*				1973	86213
		1.00			52.0	20.000	1.023	7.000	10.100	---	19.90	71.46			94.63			1973	86213	
		1.00			52.0	20.000	1.023	2.610	6.450	---	30.90	63.23			105.18*			1973	86213	
T36	Sheet	0.06	R.T.	L-T	63.6	2.000	0.062	0.625	1.160	---	41.30	43.53*			71.21*				1973	86213
		0.06			63.6	2.000	0.062	0.625	1.250	---	41.90	44.16*	---			78.77*	---		1973	86213
T36	Sheet	0.06	R.T.	T-L	56.4	2.000	0.062	0.625	1.280	---	37.40	39.42*			72.45*				1973	86213
		0.06			56.4	2.000	0.062	0.625	1.220	---	37.50	39.53*	---			68.46*	---		1973	86213
T4	Sheet	0.04	R.T.	L-T	37.5	7.500	0.040	1.950	---	---	27.40	50.06*			---				1966	86734
		0.04			37.5	7.500	0.040	1.930	---	---	29.00	52.66*			---			1966	86734	
		0.04			37.5	7.500	0.040	0.500	---	---	40.30	35.81*			---			1966	86734	
		0.04			37.5	7.500	0.040	1.100	---	---	35.60	47.43*			---			1966	86734	
		0.04			37.5	7.500	0.040	0.500	---	---	40.50	35.99*			---			1966	86734	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _i	MAX (Ksi) σ _{max}	K _{app} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi/in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T4 Cont'd	Sheet Cont'd	0.04	R.T. Cont'd	L-T Cont'd	37.5	7.500	0.040	4.100	---	---	16.83	52.84*	Cont'd	Cont'd	Cont'd	---	Cont'd	1966	86734
		0.04			37.5	7.500	0.040	0.540	---	---	39.60	36.59*				---		1966	86734
		0.04			37.5	7.500	0.040	5.000	---	---	12.14	48.11*				---		1966	86734
		0.04			37.5	7.500	0.040	4.600	---	---	12.13	43.16*				---		1966	86734
		0.04			37.5	7.500	0.040	1.000	---	---	36.30	46.00*				---		1966	86734
		0.04			37.5	7.500	0.040	0.500	---	---	39.20	34.84*				---		1966	86734
		0.04			37.5	7.500	0.040	3.850	---	---	17.47	51.76*				---		1966	86734
		0.06			41.6	7.500	0.064	1.500	---	---	34.90	54.93*				---		1966	86734
		0.06			41.6	7.500	0.064	1.020	---	---	37.60	48.14*				---		1966	86734
		0.06			41.6	7.500	0.064	0.500	---	---	42.00	37.32*				---		1966	86734
T4	Sheet	0.06	R.T.	L-T	41.6	7.500	0.064	0.800	---	---	40.00	45.16*	---	---	---	---	---	1966	86734
		0.06			41.6	7.500	0.064	1.000	---	---	37.70	47.77*				---		1966	86734
		0.06			41.6	7.500	0.064	2.100	---	---	30.70	58.62*				---		1966	86734
		0.06			41.6	7.500	0.064	0.500	---	---	41.20	36.61*				---		1966	86734
		0.06			41.6	7.500	0.064	4.030	---	---	17.80	54.94*				---		1966	86734
		0.06			41.6	7.500	0.064	5.000	---	---	12.13	48.08*				---		1966	86734
		0.06			41.6	7.500	0.064	0.500	---	---	42.30	37.59*				---		1966	86734
		0.06			41.6	7.500	0.064	3.100	---	---	12.13	29.99				---		1966	86734
		0.06			41.6	7.500	0.064	3.900	---	---	18.50	55.34*				---		1966	86734
		0.06			41.6	7.500	0.064	3.900	---	---	18.50	55.34*				---		1966	86734

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																					
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER		
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _i	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV				
BUCKLING OF CRACK EDGES NOT RESTRAINED																					
T4	Sheet	0.04	R.T.	T-L	37.7	7.500	0.040	0.550	---	---	38.10	35.53*	---	---	---	---	---	1966	86734		
		0.04			37.7	7.500	0.040	4.020	---	---	14.87	45.79*						---	---	1966	86734
		0.04			37.7	7.500	0.040	0.500	---	---	38.90	34.57*						---	---	1966	86734
		0.04			37.7	7.500	0.040	0.500	---	---	39.30	34.92*						---	---	1966	86734
		0.04			37.7	7.500	0.040	2.020	---	---	27.70	51.67*						---	---	1966	86734
		0.04			37.7	7.500	0.040	1.050	---	---	35.50	46.15*						---	---	1966	86734
		0.04			37.7	7.500	0.040	0.530	---	---	38.10	34.87*						---	---	1966	86734
		0.04			37.7	7.500	0.040	1.100	---	---	34.20	45.56*						---	---	1966	86734
		0.04			37.7	7.500	0.040	2.060	---	---	27.30	51.53*						---	---	1966	86734
		0.04			37.7	7.500	0.040	5.350	---	---	12.13	53.30*						---	---	1966	86734
		0.04			37.7	7.500	0.040	4.000	---	---	16.00	49.03*						---	---	1966	86734
		0.04			37.7	7.500	0.040	5.000	---	---	12.14	48.11*						---	---	1966	86734
T4	Sheet	0.06	R.T.	T-L	41.4	7.500	0.064	2.080	---	---	28.00	53.15*	---	---	---	---	1966	86734			
		0.06			41.4	7.500	0.064	1.100	---	---	35.20	46.89*					---	---	1966	86734	
		0.06			41.4	7.500	0.064	4.390	---	---	14.63	48.24*					---	---	1966	86734	
		0.06			41.4	7.500	0.064	0.510	---	---	37.90	34.02*					---	---	1966	86734	
		0.06			41.4	7.500	0.064	0.500	---	---	39.40	35.01*					---	---	1966	86734	
		0.06			41.4	7.500	0.064	1.950	---	---	29.70	54.42*					---	---	1966	86734	
		0.06			41.4	7.500	0.064	3.900	---	---	17.58	52.59*					---	---	1966	86734	
		0.06			41.4	7.500	0.064	3.900	---	---	17.58	52.59*					---	---	1966	86734	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in.)	K _{app} MEAN	STAN DEV	K _C (Ksi√in.)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T4 Cont'd	Sheet Cont'd	0.06	R.T. Cont'd	T-L Cont'd	41.4	7.500	0.064	0.500	---	---	40.80	36.26*	Cont'd	Cont'd	---	Cont'd	---	1966	86734
		0.06			41.4	7.500	0.064	5.200	---	---	11.54	48.45*			---		---	1966	86734
		0.06			41.4	7.500	0.064	0.560	---	---	38.80	36.52*			---		---	1966	86734
		0.06			41.4	7.500	0.064	4.100	---	---	16.00	50.23*			---		---	1966	86734
		0.06			41.4	7.500	0.064	1.150	---	---	34.70	47.33*			---		---	1966	86734
T6	Sheet	0.06	R.T.	L-T	54.7	2.000	0.062	0.621	0.860	---	39.10	41.05*	---	---	51.44*	---	1973	86213	
		0.06			54.7	2.000	0.062	0.622	0.930	---	39.70	41.76*			55.60*		1973	86213	
		0.06			54.7	2.000	0.062	0.624	0.850	---	39.30	41.42*			51.24*		1973	86213	
T6	Sheet	0.06	R.T.	T-L	54.2	2.000	0.062	0.622	0.790	---	35.80	37.66*	---	---	44.21*	---	1973	86213	
		0.06			54.2	2.000	0.062	0.623	0.840	---	36.00	37.87*			46.62*		1973	86213	
		0.06			54.2	2.000	0.062	0.622	0.880	---	35.10	36.92*			47.01*		1973	86213	
BUCKLING OF CRACK EDGES RESTRAINED																			
T62 (GQ)	Sheet	0.13	R.T.	L-T	58.7	5.980	0.126	2.010	---	---	29.71	56.60	---	---	91.80	---	1978	GD005	
T62 (GQ)	Sheet	0.13	R.T.	L-T	58.7	15.970	0.126	4.000	---	---	28.87	75.30	75.9	0.8	82.30	---	1978	GD005	
		0.13			58.7	16.000	0.126	4.030	---	---	29.17	76.40			143.70*		1978	GD005	
T62 (GQ)	Sheet	0.13	R.T.	T-L	57.0	5.990	0.125	2.030	---	---	25.78	49.40	50.8	2.0	64.00	63.0	1978	GD005	
		0.13			57.0	5.990	0.125	1.960	---	---	27.78	52.20			62.00		1.4	1978	GD005
T62 (WQ)	Sheet	0.13	R.T.	L-T	---	6.000	0.125	2.080	---	---	27.87	54.60	54.2	0.4	73.00	77.1	1978	GD005	
		0.13			---	5.980	0.126	1.990	---	---	28.40	53.90			81.20		5.8	1978	GD005

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS			K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES RESTRAINED																				
T62 (WQ)	Sheet	0.13	R.T.	L-T	---	15.980	0.126	4.000	---	---	29.37	76.60	---	---	139.20	---	---	---	1978	GD005
	Sheet	0.13	R.T.	T-L	---	5.990	0.125	1.960	---	---	27.51	51.70	51.7	0.1	73.80	72.4	2.1	---	1978	GD005
		0.13			---	5.980	0.126	1.960	---	---	27.45	51.60			70.90				1978	GD005
T81	Sheet	0.13	R.T.	L-T	64.8	5.980	0.125	2.010	---	---	30.64	58.60	55.4	2.8	91.10*	65.4	3.8	---	1978	GD005
		0.13			64.8	5.990	0.126	1.990	---	---	28.09	53.30			62.70				1978	GD005
		0.13			64.8	5.990	0.126	2.010	---	---	28.35	54.20			68.10				1978	GD005
		0.04			65.6	6.450	0.040	2.100	---	---	21.90	42.59			---				1966	86734
T81	Sheet	0.04	R.T.	L-T	65.6	6.450	0.040	2.500	---	---	21.90	47.92	46.2	3.2	---	---	---	---	1966	86734
		0.04			65.6	6.450	0.040	2.250	---	---	23.70	48.23			---				1966	86734
		0.04			65.1	9.700	0.040	4.000	---	---	19.69	55.27			---				1966	86734
T81	Sheet	0.06	R.T.	T-L	62.0	6.000	0.060	2.000	2.500	---	27.10	51.62	---	---	60.29	---	---	1966	86734	
T81	Sheet	0.13	R.T.	T-L	64.1	5.990	0.126	2.020	---	---	23.32	44.70	44.4	0.9	59.50	57.3	2.0	---	1978	GD005
		0.13			64.1	6.000	0.126	1.980	---	---	22.88	43.30			55.70				1978	GD005
		0.13			64.1	6.010	0.126	2.060	---	---	23.24	45.10			56.80				1978	GD005
T81	Sheet	0.06	R.T.	T-L	62.0	15.000	0.060	5.000	6.000	---	18.90	56.92	---	---	64.51	---	---	1966	86734	
T81	Sheet	0.06	R.T.	T-L	62.0	18.000	0.060	6.000	7.000	---	18.50	61.03	---	---	67.78	---	---	1966	86734	
T81	Sheet	0.06	R.T.	T-L	62.0	21.000	0.060	7.000	8.200	---	17.60	62.71	---	---	69.85	---	---	1966	86734	
T81	Sheet	0.06	R.T.	T-L	62.0	24.000	0.060	8.000	9.100	---	16.40	62.47	---	---	68.15	---	---	1966	86734	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																					
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}				K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{max} (Ksi√in)	K _{max} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV				
BUCKLING OF CRACK EDGES NOT RESTRAINED																					
T81	Sheet	0.06	-65	L-T	67.0	9.000	0.065	2.950	---	---	28.50	65.76	---	---	---	---	---	---	1966	86734	
		0.06			68.0	2.000	0.061	0.625	0.970	---	35.40	37.31			51.37*			1973	86213		
		0.06			68.0	2.000	0.061	0.619	1.065	---	36.10	37.82			56.99*			1973	86213		
		0.06			68.0	2.000	0.061	0.619	0.940	---	38.20	40.02*			53.97*			1973	86213		
		0.06			68.0	2.000	0.061	0.617	1.040	---	36.60	38.26			56.54*			1973	86213		
		0.06	R.T.		L-T	68.0	2.000	0.061	0.620	1.070	---	37.00	38.84	38.0	0.5	58.73*	---	---	1973	86213	
0.06		68.0	2.000	0.062		0.625	1.040	---	36.00	37.94	55.61*					1973	86213				
0.06		69.1	2.000	0.062		0.624	0.840	---	35.90	37.84	46.39*					1973	86213				
0.06		69.1	2.000	0.062		0.623	0.870	---	35.40	37.24	46.99*					1973	86213				
		0.06			69.1	2.000	0.062	0.623	0.960	---	36.50	38.39			52.50*			1973	86213		
		0.12			65.2	3.000	0.123	1.000	1.550	---	35.20	47.41*			66.20*			1973	86213		
		0.12			65.2	3.000	0.123	1.080	1.690	---	34.00	48.19*			69.61*			1973	86213		
		0.12			65.2	3.000	0.123	1.070	1.680	---	32.70	46.06			66.53*			1973	86213		
		0.12			64.9	3.000	0.125	1.060	1.620	---	33.10	46.33	46.2	0.6	64.93*	---	---	1973	86213		
		0.12			64.9	3.000	0.125	1.040	1.660	---	33.90	46.85			68.14*			1973	86213		
T81	Sheet	0.12	R.T.	L-T	64.9	3.000	0.125	1.000	1.580	---	33.70	45.39			64.53*			1973	86213		
		0.06					59.0	9.000	0.064	3.320	---	---	27.70	69.15			---			1966	86734
		0.06					59.0	9.000	0.065	3.380	---	---	28.70	72.54	70.8	2.4	---	---	---	1966	86734

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

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ALUMINUM 2024 K _C																										
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER							
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV									
BUCKLING OF CRACK EDGES NOT RESTRAINED																										
T81	Sheet	0.06	R.T.	L-T	59.0	20.000	0.065	11.50	---	---	14.00	75.62	76.6	1.4	---	---	---	1966	86734							
		0.06			59.0	20.000	0.065	11.25	---	---	14.70	77.58			---	---	---	1966	86734							
T81	Sheet	0.06	250	L-T	59.0	9.000	0.065	3.600	---	---	32.40	85.66*	---	---	---	---	---	1966	86734							
		0.06			66.7	2.000	0.061	0.617	0.985	---	33.30	34.81	35.5	1.1	48.93*	---	---	---	1973	86213						
0.06	66.7	2.000	0.061	0.625	0.980	---	35.20	37.10	1973	86213																
0.06	66.7	2.000	0.061	0.613	0.960	---	33.70	35.09	1973	86213																
0.06	66.7	2.000	0.061	0.625	1.065	---	35.40	37.31	1973	86213																
0.06	66.7	2.000	0.061	0.625	0.940	---	33.00	34.78	1973	86213																
0.06	66.7	2.000	0.061	0.617	0.985	---	33.60	35.13	1973	86213																
T81	Sheet	0.06	R.T.	T-L	67.2	2.000	0.062	0.622	0.840	---	32.30	33.98	35.5	1.1	41.74*	---	---	---	1973	86213						
		0.06			67.2	2.000	0.062	0.622	0.840	---	32.30	33.98							1973	86213						
		0.06			67.2	2.000	0.062	0.623	0.860	---	34.40	36.18							1973	86213						
		0.06			67.2	2.000	0.062	0.622	0.960	---	33.60	35.34							1973	86213						
		0.12			66.4	3.000	0.123	1.060	1.420	---	30.50	42.69							42.3	0.4	53.09*	---	---	---	1973	86213
		0.12			66.4	3.000	0.123	1.000	1.340	---	31.00	41.75													1973	86213
T81	Sheet	0.12	R.T.	T-L	66.4	3.000	0.123	1.060	1.570	---	30.90	42.98	42.3	0.4	58.81*	---	---	---	1973	86213						
		0.12			66.0	3.000	0.125	1.070	1.480	---	30.00	42.26							1973	86213						
		0.12			66.0	3.000	0.125	1.070	1.600	---	30.00	42.26							1973	86213						
		0.12			66.0	3.000	0.125	1.000	1.470	---	31.20	42.02							1973	86213						
		0.12			66.0	3.000	0.125	1.000	1.470	---	31.20	42.02							1973	86213						

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi/in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T81	Sheet	0.06	R.T.	T-L	62.0	6.000	0.060	2.000	2.420	---	25.60	48.76	51.2	3.5	55.60	57.9	3.2	1966	86734
		0.06			62.0	6.000	0.060	2.000	2.360	---	28.20	53.71			60.14			1966	86734
T81	Sheet	0.06	R.T.	T-L	62.0	9.000	0.060	3.000	3.500	---	23.00	53.65	55.2	2.3	59.59	61.2	5.1	1966	86734
		0.06			62.0	9.000	0.060	3.000	3.260	---	23.20	54.12			57.20			1966	86734
		0.06			62.0	9.000	0.060	3.000	3.700	---	24.80	57.85			66.90			1966	86734
		0.06			62.0	15.000	0.060	5.000	5.600	---	16.80	50.59			54.60			1966	86734
T81	Sheet	0.06	R.T.	T-L	62.0	15.000	0.060	5.000	5.600	---	16.80	50.59	50.6	0.0	54.60	54.6	0.0	1966	86734
		0.06			62.0	18.000	0.060	6.000	6.640	---	15.60	51.46			55.08			1966	86734
T81	Sheet	0.06	R.T.	T-L	62.0	18.000	0.060	6.000	6.600	---	15.40	50.80	51.1	0.5	54.14	54.6	0.7	1966	86734
		0.06			62.0	21.000	0.060	7.000	8.200	---	14.60	52.02			57.95			1966	86734
T81	Sheet	0.06	R.T.	T-L	62.0	21.000	0.060	7.000	8.000	---	13.80	49.17	50.6	2.0	53.82	55.9	2.9	1966	86734
		0.06			62.0	24.000	0.060	8.000	8.800	---	13.00	49.52			52.78			1966	86734
T81	Sheet	0.06	R.T.	T-L	62.0	24.000	0.060	8.000	9.000	---	12.50	47.62	48.6	1.3	61.54	52.2	0.9	1966	86734
		0.06			62.0	24.000	0.060	8.000	9.000	---	12.50	47.62			61.54			1966	86734
T851	Sheet	0.12	R.T.	L-T	65.8	3.000	0.125	1.000	1.510	19.50	31.50	42.42	42.0	1.0	57.84*	---	---	1973	86213
		0.12			65.8	3.000	0.125	1.090	1.530	14.50	29.00	41.37			53.89*			1973	86213
		0.12			65.8	3.000	0.125	1.000	1.400	19.90	31.60	42.56			54.36*			1973	86213
		0.12			65.8	3.000	0.125	1.000	1.330	18.70	32.30	43.50			53.30*			1973	86213
		0.12			65.8	3.000	0.125	1.080	1.700	15.50	29.40	41.67			60.56*			1973	86213
		0.12			65.8	3.000	0.125	1.100	1.520	15.30	28.60	41.05			52.83*			1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

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ALUMINUM 2024 K _C																						
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER			
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _i	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV					
BUCKLING OF CRACK EDGES NOT RESTRAINED																						
T851 Cont'd	Sheet Cont'd	0.12			65.8	3.000	0.125	1.000	1.500	19.50	32.40	43.64	Cont'd			59.14*	Cont'd			1973	86213	
		0.12			66.1	3.000	0.125	1.000	1.460	20.40	30.90	41.62				55.08*				1973	86213	
		0.12			66.1	3.000	0.125	1.000	1.300	17.40	30.70	41.35				49.76*				1973	86213	
		0.12			66.1	3.000	0.125	1.070	1.430	14.60	28.60	40.29				50.08*				1973	86213	
		0.12	R.T. Cont'd	L-T Cont'd	66.1	3.000	0.125	1.060	1.560	17.50	29.80	41.45	Cont'd			56.38*	Cont'd			1973	86213	
		0.12			65.8	3.000	0.127	1.110	1.510	16.90	29.70	42.90				54.54*				1973	86213	
		0.12			62.2	3.000	0.132	1.000	1.640	---	34.20	46.06*				67.91*				1973	86213	
		0.12			62.2	3.000	0.132	1.050	1.740	---	33.20	47.36*				70.11*				1973	86213	
		0.12			62.2	3.000	0.132	1.060	1.750	---	33.20	46.47*				70.55*				1973	86213	
		0.25			65.2	4.000	0.242	1.330	2.140	---	31.90	49.53				71.60*				1973	86213	
		0.25	R.T.	L-T	65.2	4.000	0.242	1.330	2.140	---	30.90	47.97	0.8			69.36*	---			1973	86213	
		0.25			65.2	4.000	0.243	1.410	2.290	---	30.00	48.41				72.13*				1973	86213	
T851	Plate		0.25	R.T.	L-T	66.4	4.000	0.256	1.330	2.210	---	33.80	52.48	51.9			78.33*	---			1973	86213
			0.25			66.4	4.000	0.256	1.440	2.210	---	31.30	51.23	0.9			72.53*	---			1973	86213
T851	Plate	1.00			65.8	20.000	1.000	7.000	9.170	---	10.70	38.42				46.84				1973	86213	
		1.00			65.8	20.000	1.000	7.000	9.920	---	11.20	40.22	2.3			52.41	48.4			1973	86213	
		1.00	R.T.	L-T	65.8	20.000	1.000	7.000	9.570	---	11.00	39.50	38.6			49.90	3.8			1973	86213	
		1.00			65.8	20.000	1.000	7.000	9.540	---	10.70	38.42				48.41				1973	86213	
		1.00			65.8	20.000	1.000	7.000	9.680	---	11.40	40.94				52.22				1973	86213	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T851 Cont'd	Plate Cont'd	1.00	R.T. Cont'd	L-T Cont'd	65.8	20.000	1.000	7.000	9.300	---	10.90	39.14	Cont'd	Cont'd	Cont'd	48.27	Cont'd	1973	86213
		1.00			65.8	20.000	1.000	7.000	9.300	---	11.50	41.30				50.93		1973	86213
		1.00			65.8	20.000	1.000	7.000	10.050	---	11.50	41.30				54.44		1973	86213
		1.00			66.1	20.000	1.000	7.000	9.250	---	10.00	35.91				44.09		1973	86213
		1.00			66.1	20.000	1.000	7.000	9.170	---	10.70	38.42				46.84		1973	86213
		1.00			66.1	20.000	1.000	7.000	9.710	---	9.80	35.19				45.01		1973	86213
		1.00			66.1	20.000	1.000	7.000	8.900	---	9.70	34.83				41.45		1973	86213
		0.12			64.4	3.000	0.120	1.130	1.450	13.80	25.00	36.56				44.30		1973	86213
		0.12			64.4	3.000	0.124	1.000	1.420	19.40	25.90	34.88				45.09		1973	86213
		0.12			64.4	3.000	0.125	1.000	1.300	14.90	28.10	37.84				45.55		1973	86213
T851	Sheet	0.12	R.T.	T-L	64.4	3.000	0.125	1.100	1.490	12.90	26.00	37.32	37.0	1.3	44.8	47.18*	1.7	1973	86213
		0.12			65.4	3.000	0.125	1.000	1.320	19.40	29.10	39.19				47.74		1973	86213
		0.12			65.4	3.000	0.125	1.100	1.560	13.90	25.40	36.46				48.06*		1973	86213
		0.12			65.4	3.000	0.125	1.000	1.410	17.20	28.20	37.98				48.80*		1973	86213
		0.12			65.4	3.000	0.125	1.070	1.380	14.80	26.90	37.89				45.73		1973	86213
		0.12			65.4	3.000	0.125	1.120	1.490	15.00	24.30	35.32				44.09		1973	86213
		0.12			65.4	3.000	0.125	1.050	1.300	15.80	26.90	37.41				43.60		1973	86213
		0.12			65.4	3.000	0.125	1.000	1.300	18.00	28.20	37.98				45.71		1973	86213
		0.12			65.4	3.000	0.125	1.000	1.250	16.70	26.40	35.55				41.53		1973	86213
		0.12			65.4	3.000	0.125	1.000	1.250	16.70	26.40	35.55				41.53		1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

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ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _s	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T851	Sheet	0.12			64.1	3.000	0.132	1.060	1.600	---	29.70	41.57			57.56*			1973	86213
		0.12	R.T.	T-L	64.1	3.000	0.132	1.000	1.540	---	32.10	43.23		0.9	60.01*	---	---	1973	86213
		0.12			64.1	3.000	0.132	1.060	1.580	---	30.00	41.99			57.44*			1973	86213
T851	Plate	0.25			56.6	3.000	0.245	1.120	1.320	---	17.00	24.71			27.89			1973	86213
		0.25			59.2	3.000	0.249	1.180	1.560	---	17.30	26.09			32.73			1973	86213
		0.25			56.6	3.000	0.250	1.170	1.420	---	17.30	25.93		1.4	30.11	31.3	2.5	1973	86213
		0.25	R.T.	T-L	56.6	3.000	0.251	1.160	1.500	---	18.60	27.71			33.95			1973	86213
		0.25			59.2	3.000	0.252	1.220	1.260	---	18.60	28.58			29.28			1973	86213
		0.25			59.2	3.000	0.252	1.180	1.540	---	18.00	27.14			33.65			1973	86213
T851	Plate	0.25			66.2	4.000	0.243	1.330	1.900	---	25.00	38.81			50.40			1973	86213
		0.25	R.T.	T-L	66.2	4.000	0.243	1.440	1.940	---	23.30	38.14		0.4	47.82	48.9	1.4	1973	86213
		0.25			66.2	4.000	0.243	1.330	1.800	---	25.10	38.97			48.40			1973	86213
T851	Plate	0.25			68.0	4.000	0.255	1.390	1.740	---	19.90	31.81			37.36			1973	86213
		0.25			65.8	4.000	0.256	1.330	1.860	---	28.00	43.47			55.45			1973	86213
		0.25	R.T.	T-L	65.8	4.000	0.256	1.430	1.940	---	27.00	43.98		7.1	55.41	45.8	11.1	1973	86213
		0.25			68.0	4.000	0.256	1.400	1.670	---	19.30	31.00			35.11			1973	86213
T851	Plate	1.00			64.4	20.000	1.000	7.000	9.200	---	7.10	25.50			31.16			1973	86213
		1.00	R.T.	T-L	64.4	20.000	1.000	7.000	9.230	---	7.40	26.57		1.3	32.57	33.7	1.9	1973	86213
		1.00			64.4	20.000	1.000	7.000	9.100	---	7.20	25.86			31.32			1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 90% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONTINUED)

ALUMINUM 2024 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _e	MAX (Ksi) σ _{max}	K _{app} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T851 Cont'd	Plate Cont'd	1.00	R.T. Cont'd	T-L Cont'd	64.4	20.000	1.000	7.000	9.000	---	7.50	26.93	Cont'd	Cont'd	Cont'd	32.34	1973	86213	
		1.00			65.4	20.000	1.000	7.000	8.980	---	7.90	28.37				34.00	1973	86213	
		1.00			65.4	20.000	1.000	7.000	8.840	---	8.00	28.73				34.01	1973	86213	
		1.00			65.4	20.000	1.000	7.000	8.880	---	7.80	28.01				33.27	1973	86213	
		1.00			65.4	20.000	1.000	7.000	8.890	---	7.90	28.37				33.73	1973	86213	
		1.00			65.4	20.000	1.000	7.000	9.320	---	8.00	28.73				35.49	1973	86213	
		1.00			65.4	20.000	1.000	7.000	9.320	---	8.40	30.17				37.27	1973	86213	
		1.00			65.4	20.000	1.000	7.000	8.770	---	7.70	27.65				32.53	1973	86213	
		1.00			65.4	20.000	1.000	7.000	9.700	---	7.90	28.37				36.25	1973	86213	
		T86			Sheet	0.06	R.T.	L-T	72.5	2.000	0.062	0.616				0.960	---	35.90	37.53	38.4	1.4	---	51.63*	1973	86213
0.06	72.5		2.000	0.062		0.619			0.860	---	37.30	39.08	49.07*	1973	86213				
0.06	72.5		2.000	0.062		0.617			0.900	---	36.40	38.06	49.63*	1973	86213				
0.06	72.5		2.000	0.062		0.614			0.970	---	38.70	40.38	56.16*	1973	86213				
0.06	73.4		2.000	0.062		0.622			0.900	---	36.90	38.81	50.31*	1973	86213				
0.06	73.4		2.000	0.062		0.624			0.910	---	36.90	38.89	50.76*	1973	86213				
0.06	73.4		2.000	0.062		0.623			0.720	---	38.40	40.39	44.44*	1973	86213				
0.06	72.4		2.000	0.064		0.623			0.850	---	34.60	36.40	45.11*	1973	86213				
0.06	72.4		2.000	0.064		0.619			0.820	---	35.90	37.61	45.56*	1973	86213				
0.06	72.4		2.000	0.064		0.622			0.900	---	35.00	36.82	47.72*	1973	86213				

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.5.2.2 (CONCLUDED)

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2024

ALUMINUM 2024 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{max} (Ksi√in)	K _{max} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T86	Sheet	0.06			72.9	15.810	0.063	6.010	6.930	---	16.10	54.40			60.45			1973	86213	
		0.06			72.9	15.800	0.064	3.000	3.400	---	22.20	49.29			52.82			1973	86213	
		0.06		R.T.	L-T	72.9	15.810	0.064	3.990	4.660	---	18.20	47.44			52.06		4.7	1973	86213
		0.06			72.9	15.820	0.064	5.990	6.800	---	12.80	43.14			47.35			1973	86213	
		0.06			72.9	15.820	0.064	1.010	1.420	---	34.70	43.82			52.08			1973	86213	
T86	Sheet	0.06			71.6	2.000	0.062	0.616	0.800	---	34.70	36.28			43.25*			1973	86213	
		0.06			71.6	2.000	0.062	0.618	0.875	---	33.20	34.78			44.23*			1973	86213	
		0.06			71.6	2.000	0.062	0.617	0.815	---	33.90	35.44			42.79			1973	86213	
		0.06			71.6	2.000	0.062	0.615	0.915	---	32.40	33.80			44.73*			1973	86213	
		0.06		R.T.	T-L	72.6	2.000	0.063	0.620	0.910	---	32.60	34.22			44.85*		0.6	1973	86213
		0.06			72.6	2.000	0.063	0.623	0.820	---	32.90	34.61			41.75		42.5	1973	86213	
		0.06			72.6	2.000	0.063	0.620	0.860	---	32.70	34.33			43.02			1973	86213	
		0.06			70.8	2.000	0.064	0.623	0.890	---	31.70	33.34			42.84*			1973	86213	
		0.06			70.8	2.000	0.064	0.624	0.870	---	32.20	33.94			42.75*			1973	86213	
		0.06			70.8	2.000	0.064	0.622	0.880	---	31.60	33.24			42.33			1973	86213	
T86	Sheet	0.06			71.2	15.810	0.063	3.010	3.430	---	19.70	43.82			47.10			1973	86213	
		0.06			71.2	15.820	0.063	3.020	3.360	---	21.50	47.91			50.81			1973	86213	
		0.06		R.T.	T-L	71.2	15.810	0.064	6.020	6.630	---	11.80	39.92			42.82		3.2	1973	86213
		0.06			71.2	15.820	0.064	4.000	4.620	---	15.70	40.98			44.67			1973	86213	
		0.06			71.2	15.820	0.064	1.000	1.200	---	31.90	40.08			43.95			1973	86213	

• NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

RESISTANCE CURVE

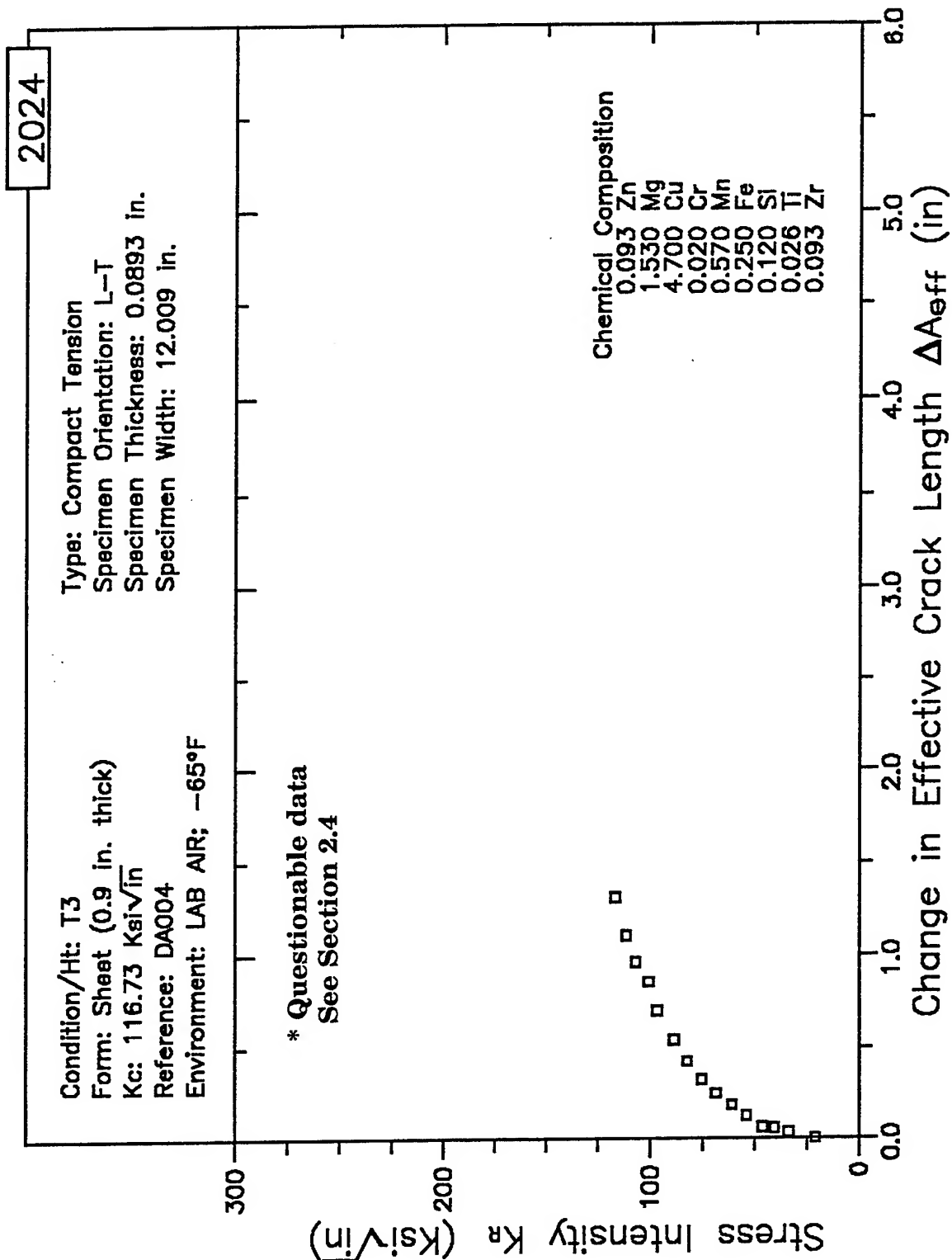


Figure 7.5.2.3.1

RESISTANCE CURVE

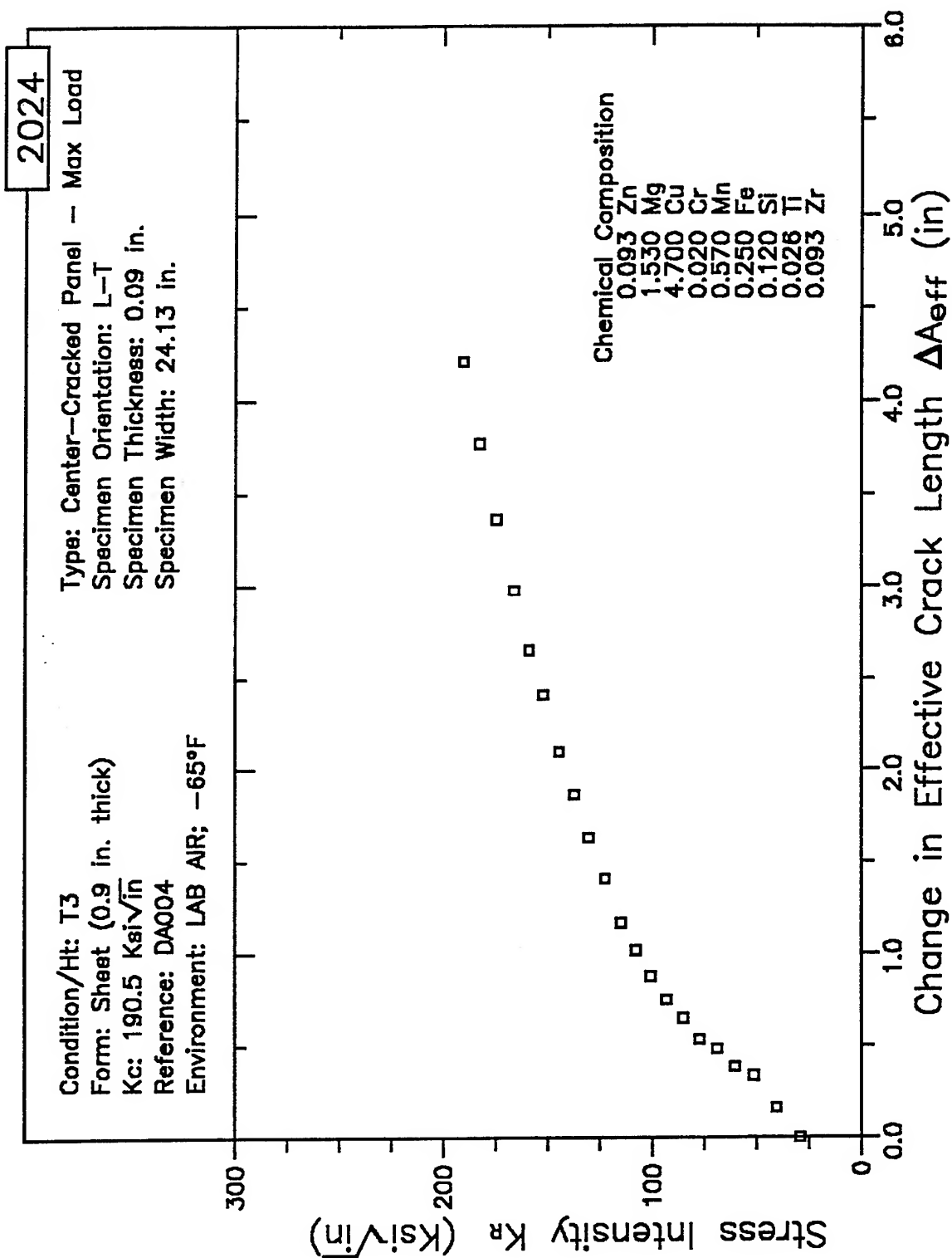


Figure 7.5.2.3.2

RESISTANCE CURVE

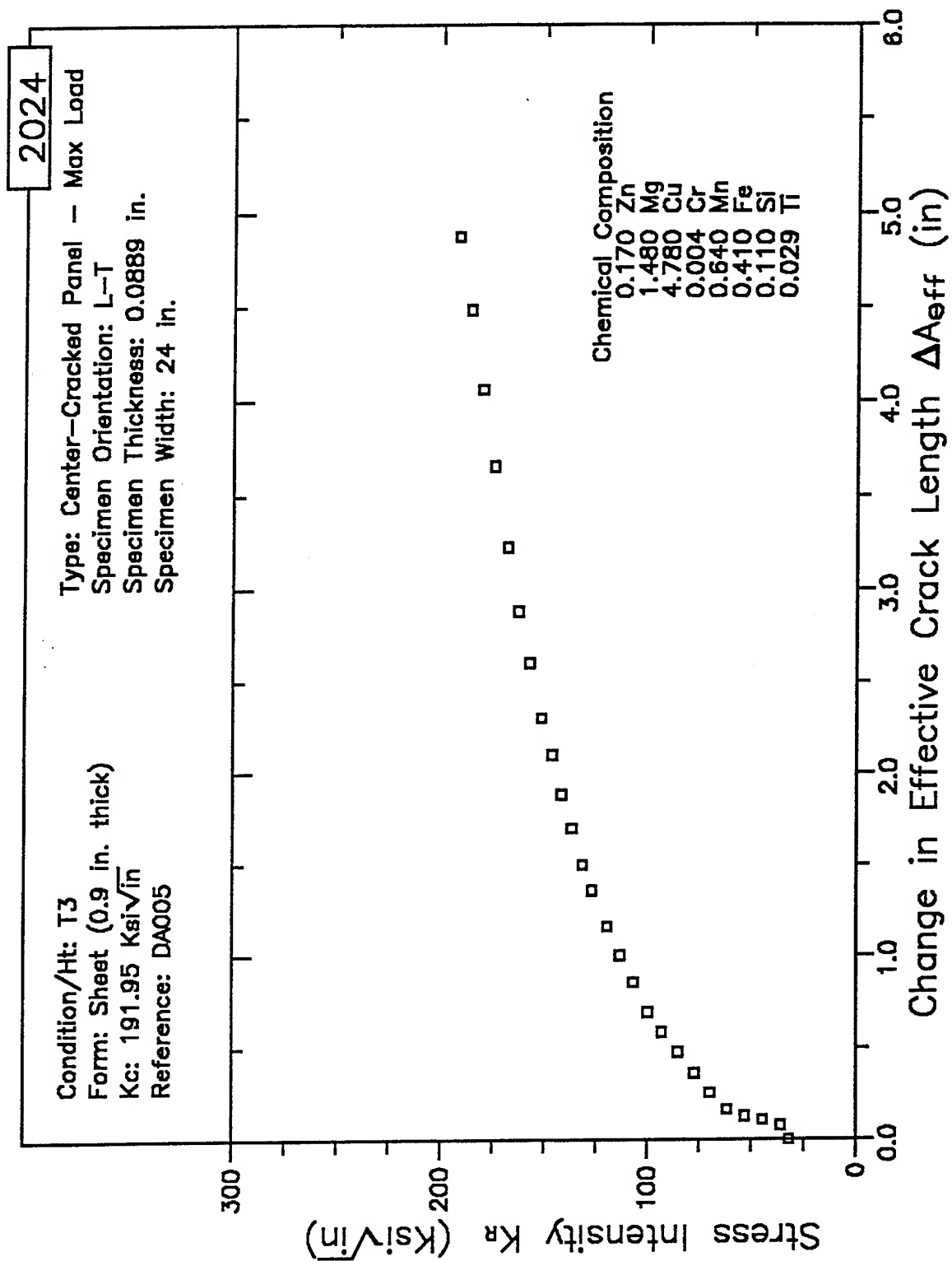


Figure 7.5.2.3.3

RESISTANCE CURVE

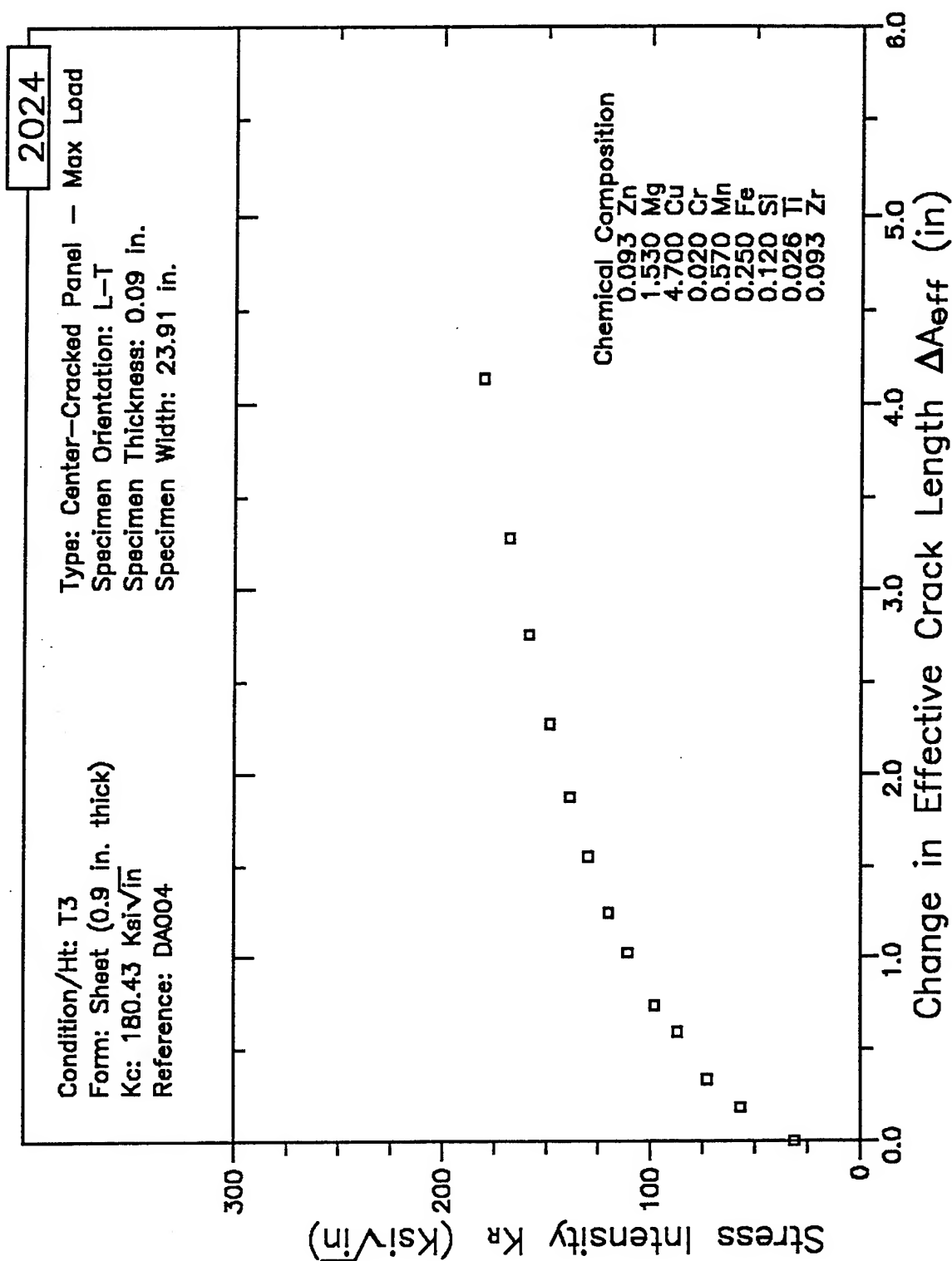


Figure 7.5.2.3.4

RESISTANCE CURVE

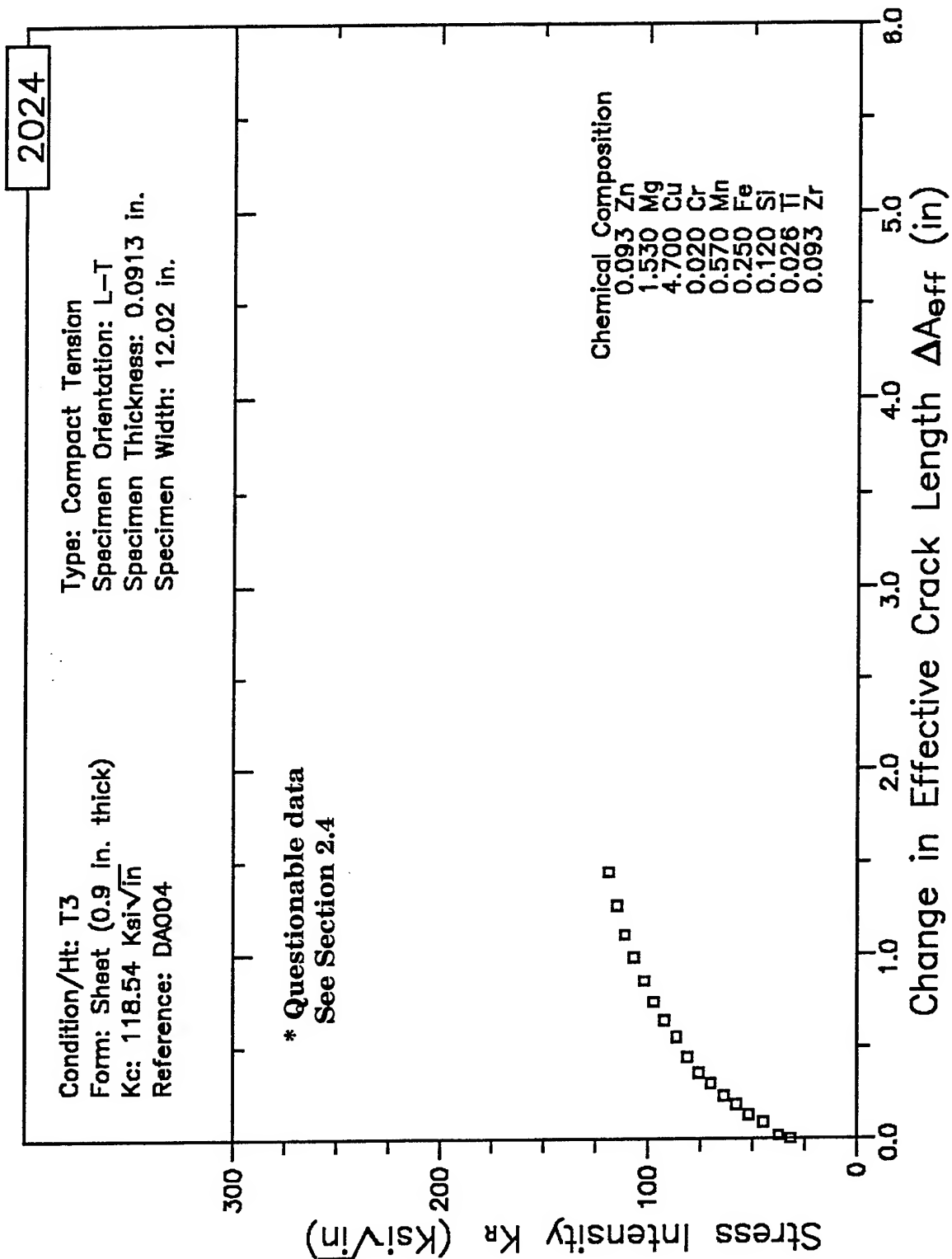


Figure 7.5.2.3.5

RESISTANCE CURVE

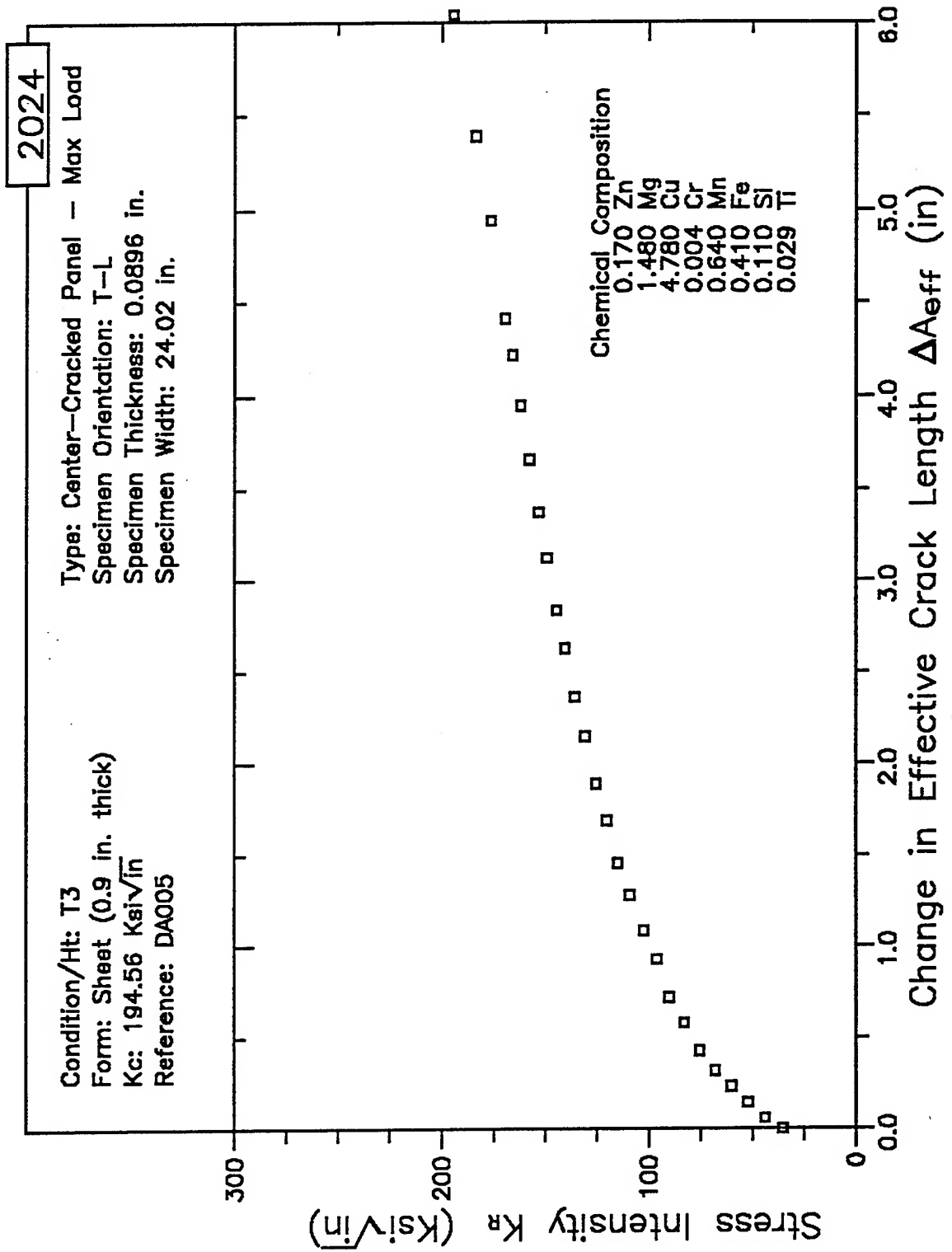


Figure 7.5.2.3.6

RESISTANCE CURVE

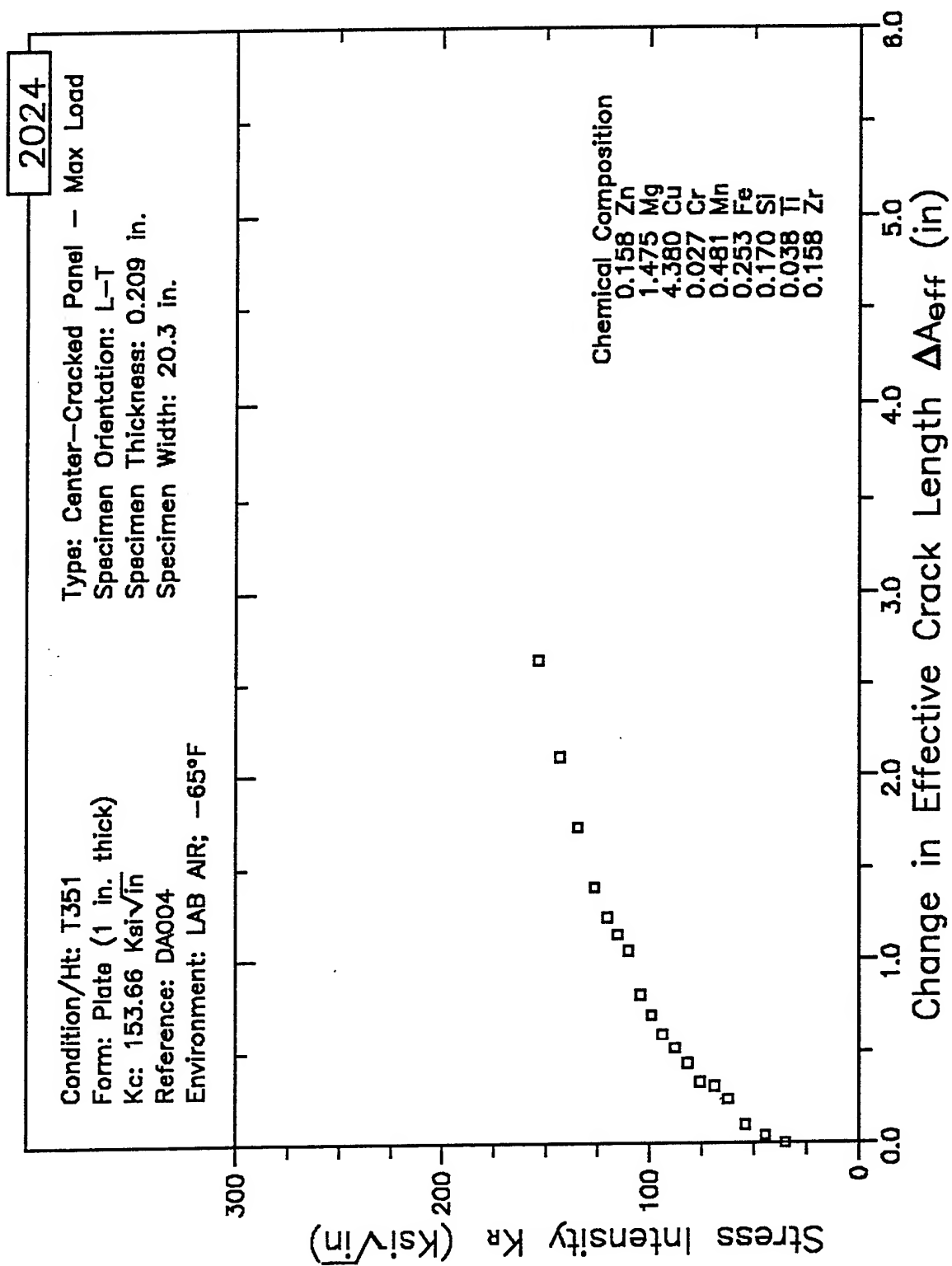


Figure 7.5.2.3.7

RESISTANCE CURVE

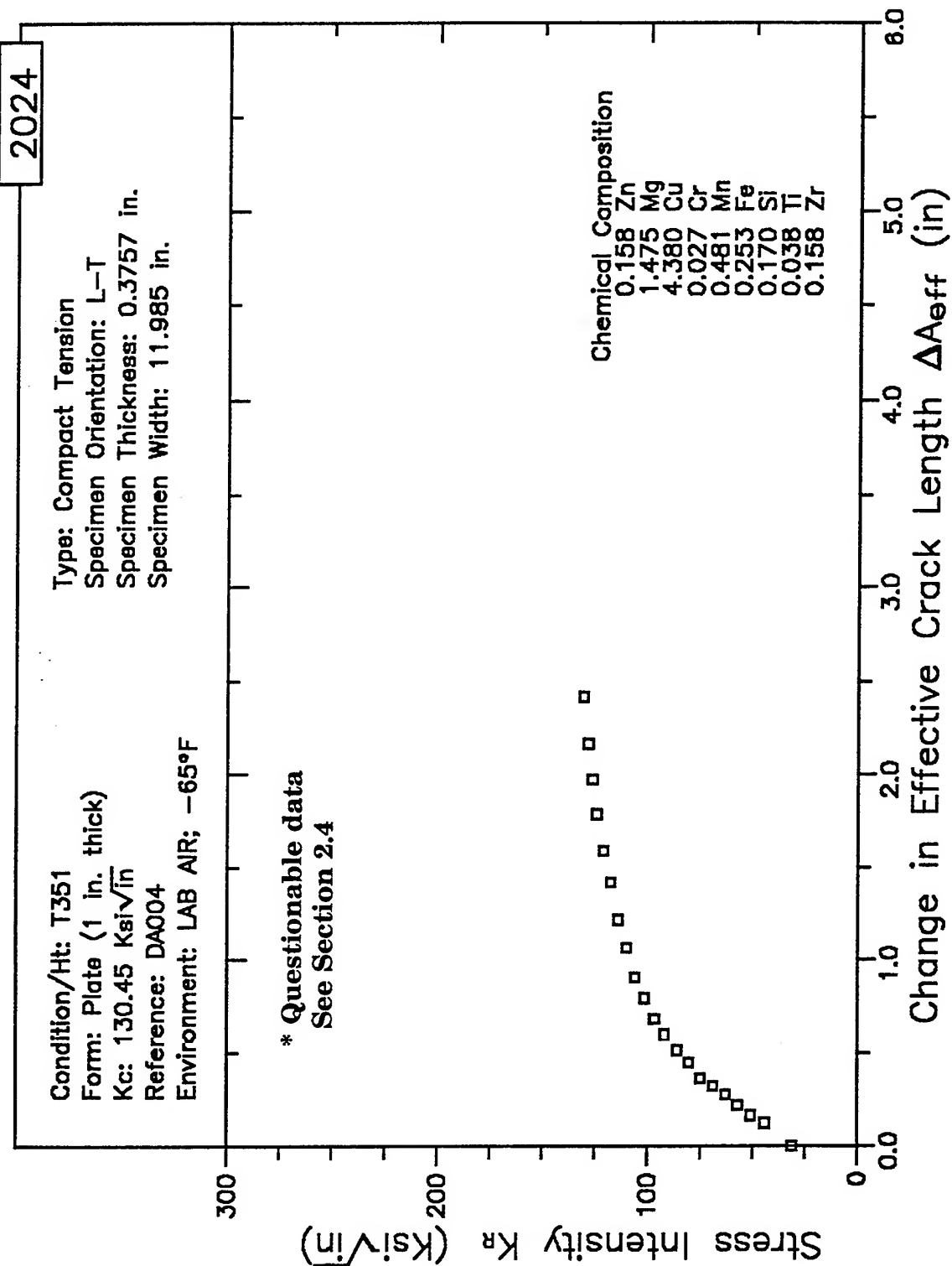


Figure 7.5.2.3.8

RESISTANCE CURVE

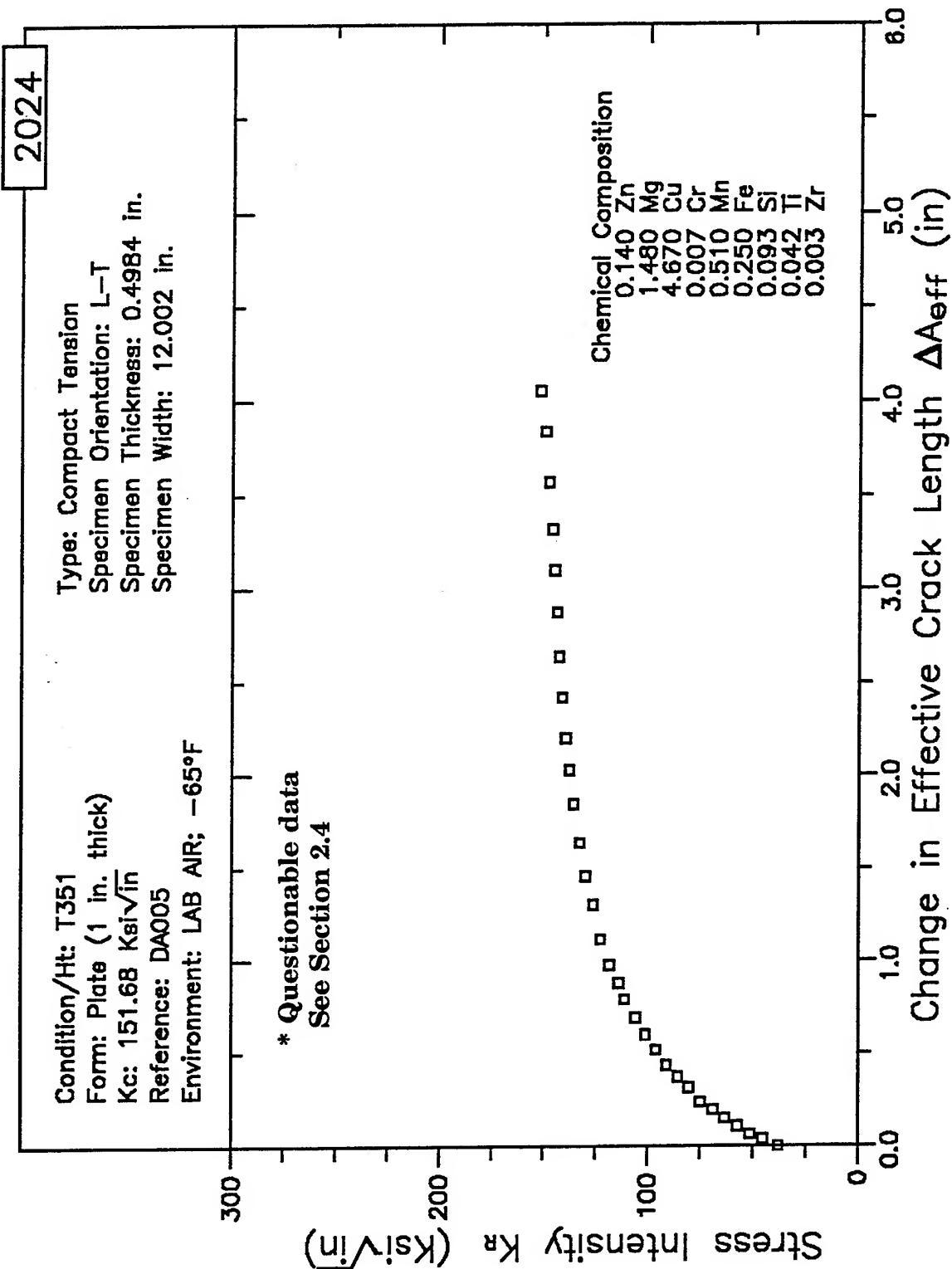


Figure 7.5.2.3.9

RESISTANCE CURVE

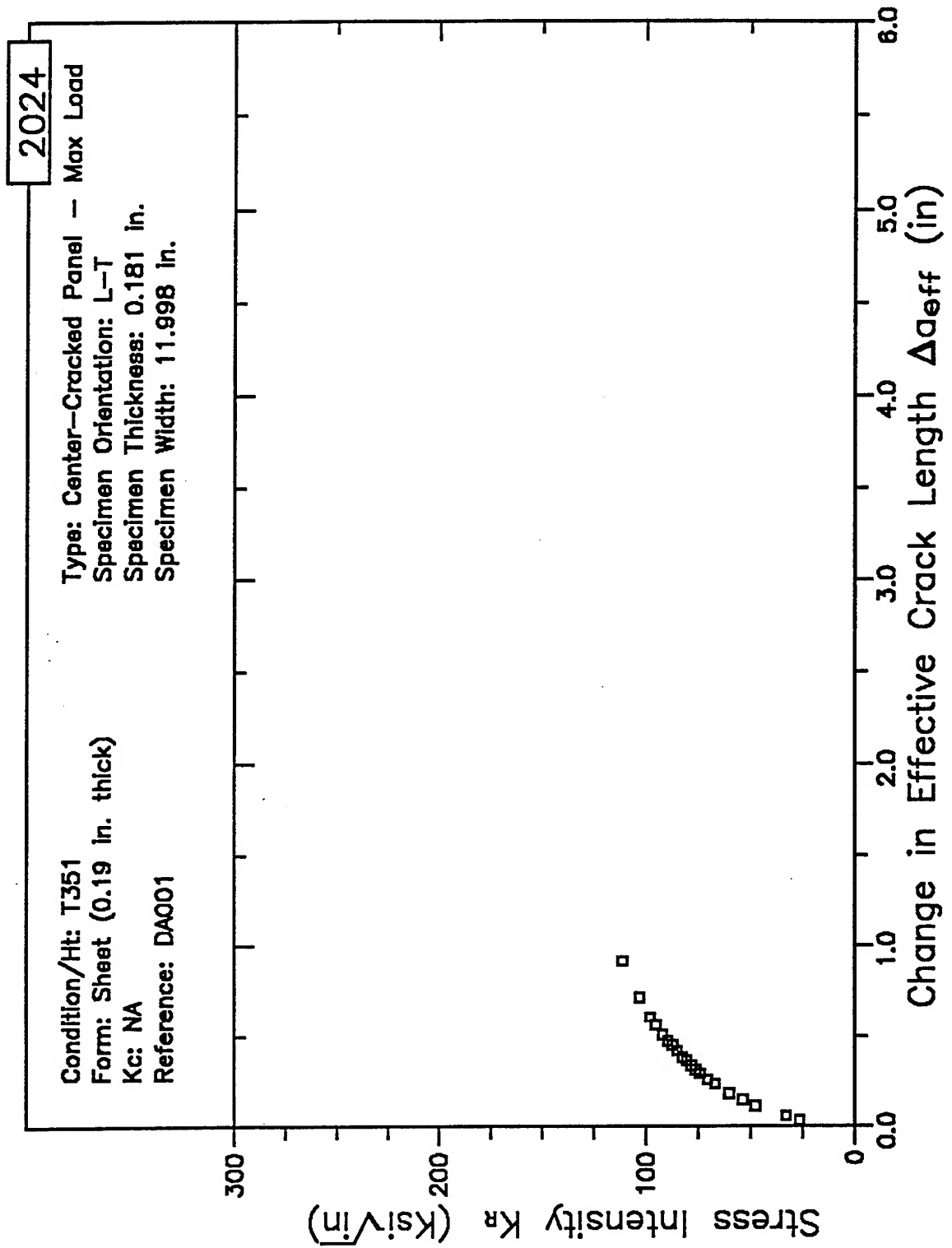


Figure 7.5.2.3.10

RESISTANCE CURVE

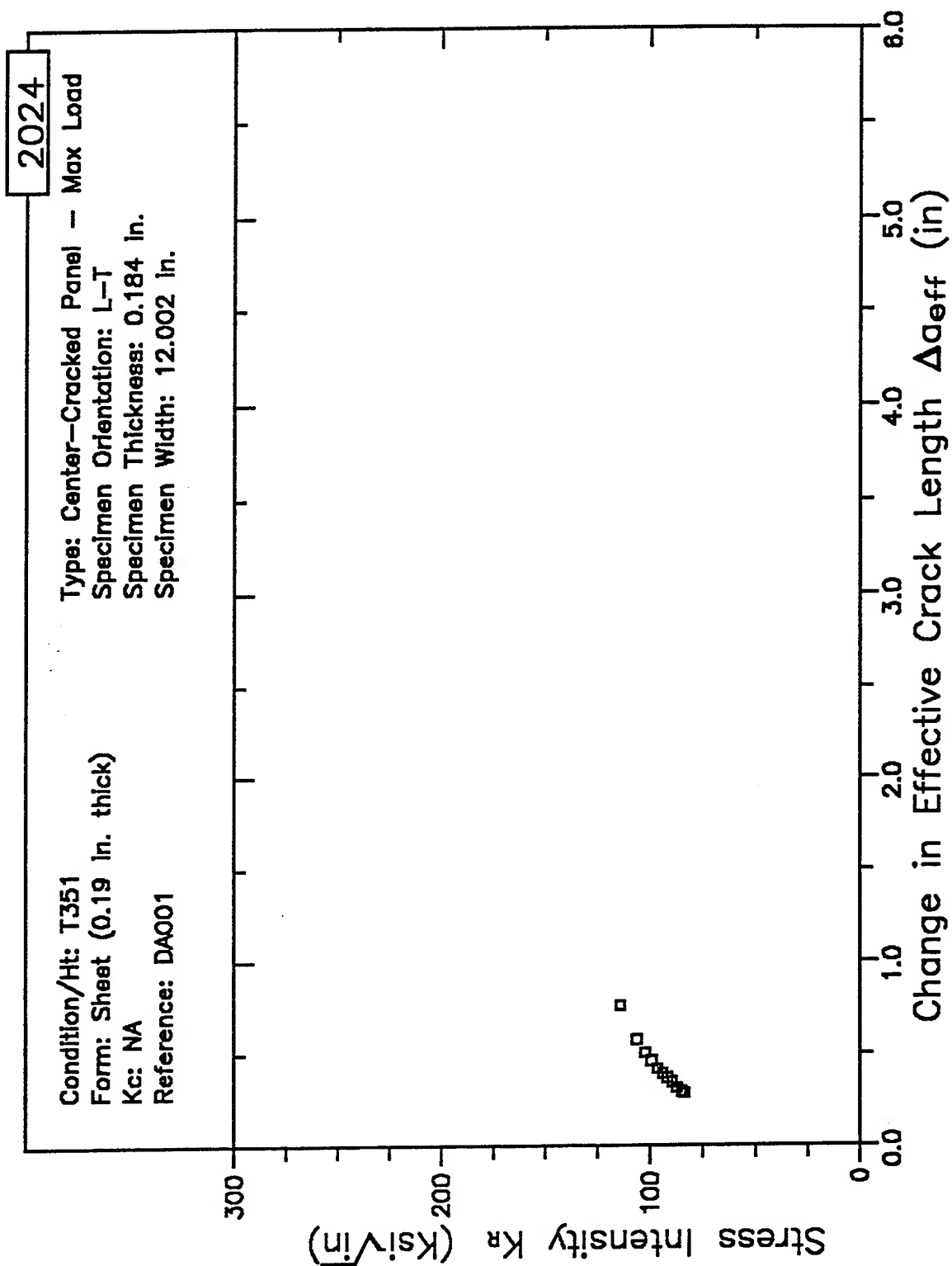


Figure 7.5.2.3.11

RESISTANCE CURVE

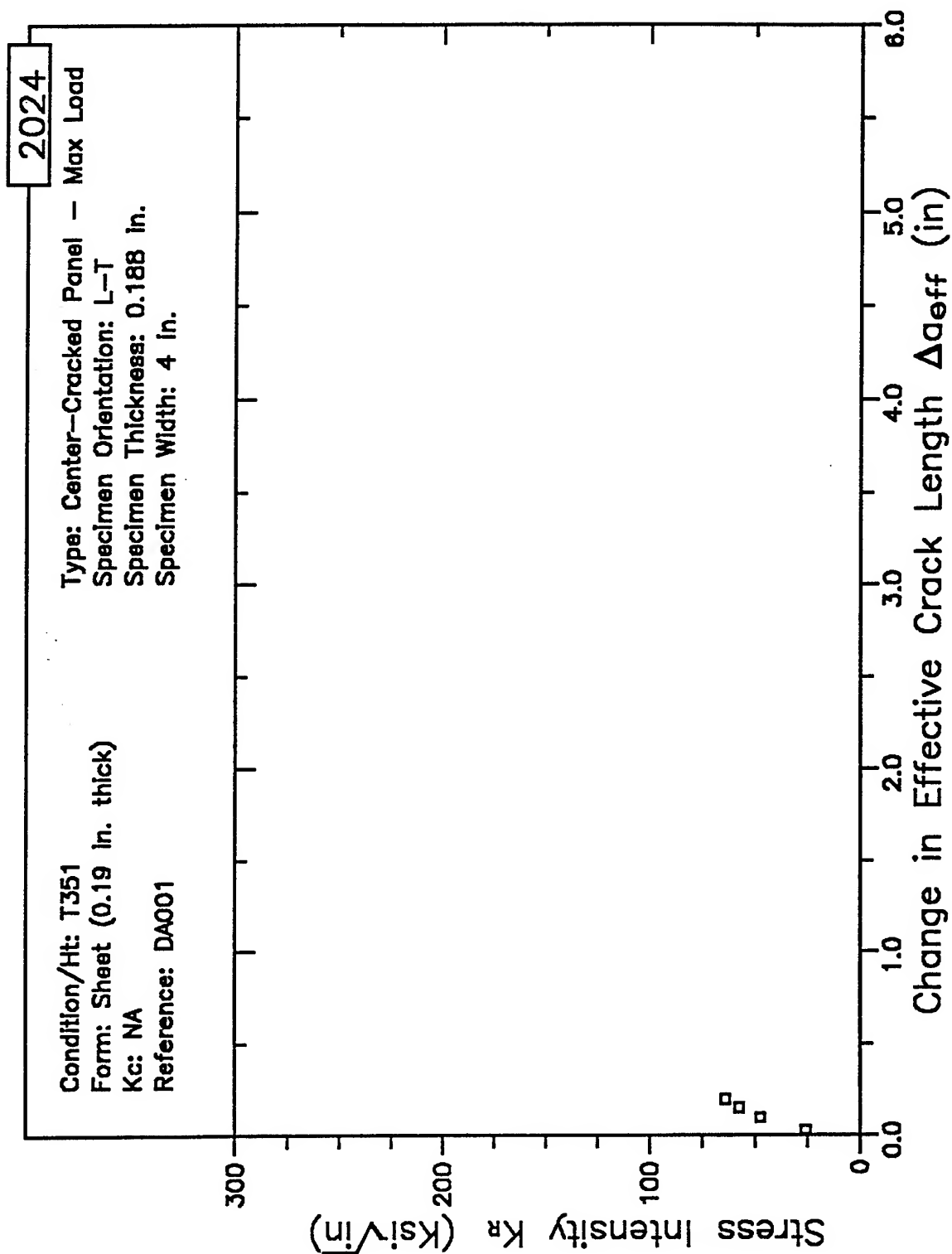


Figure 7.5.2.3.12

RESISTANCE CURVE

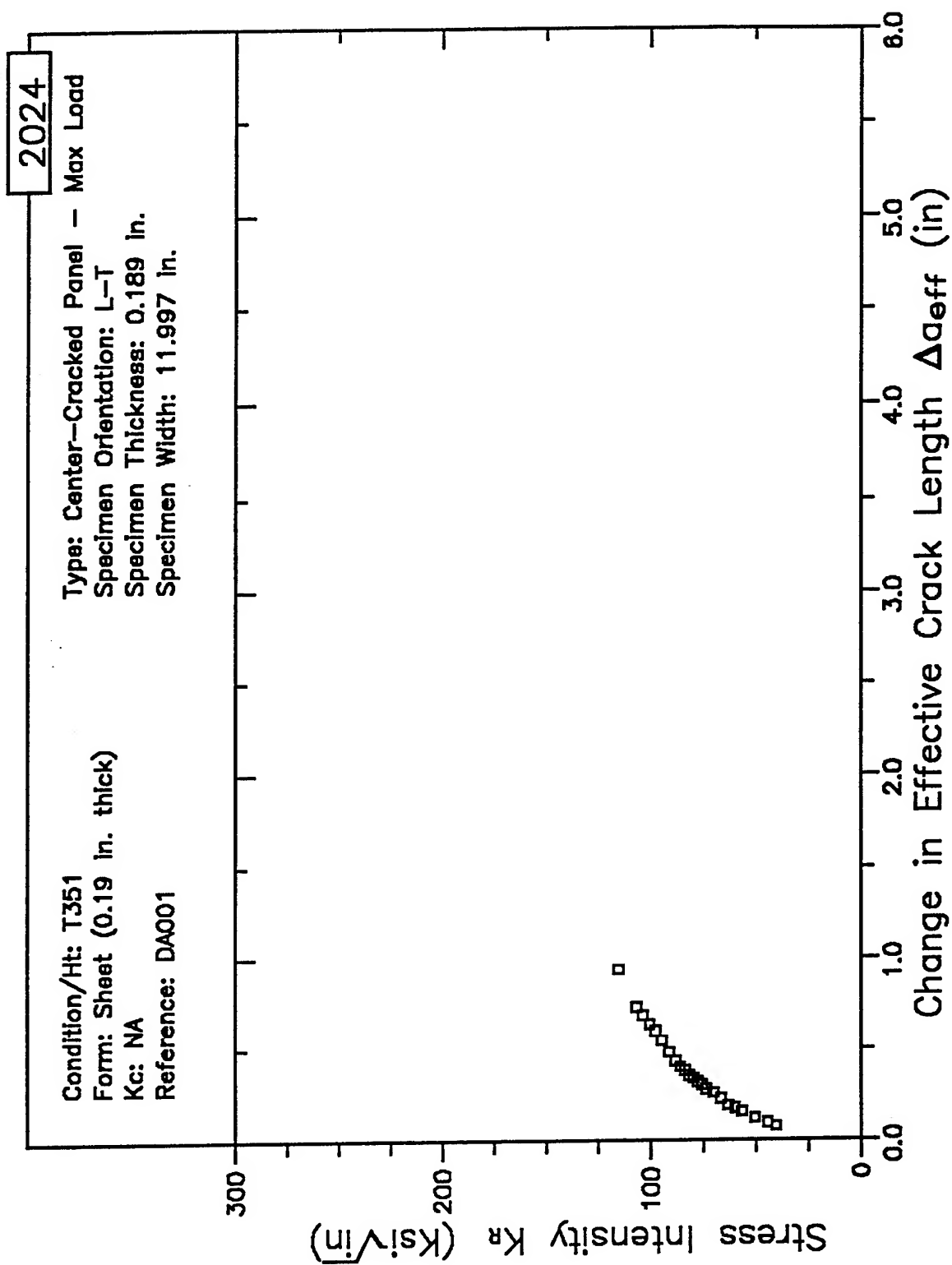


Figure 7.5.2.3.13

RESISTANCE CURVE

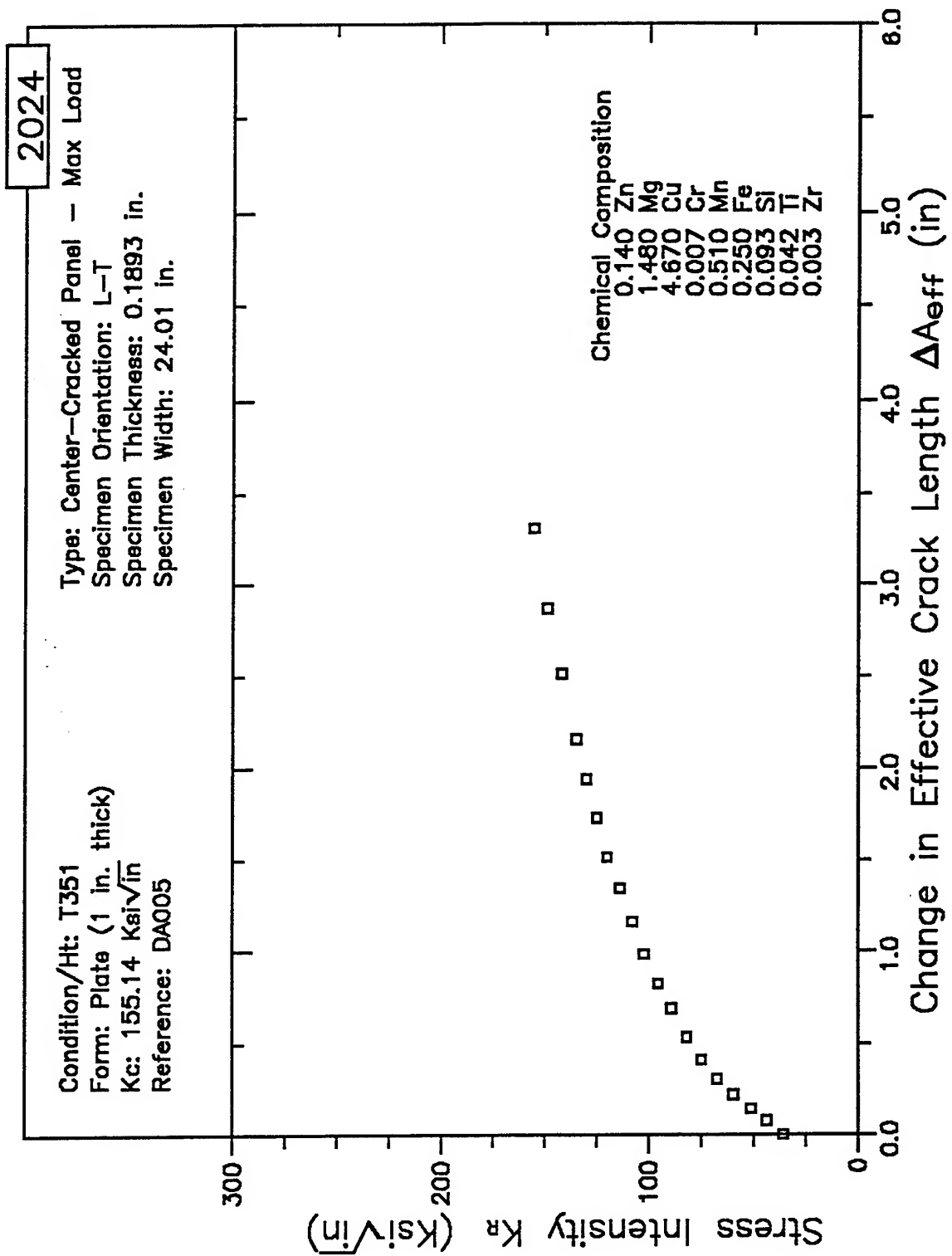
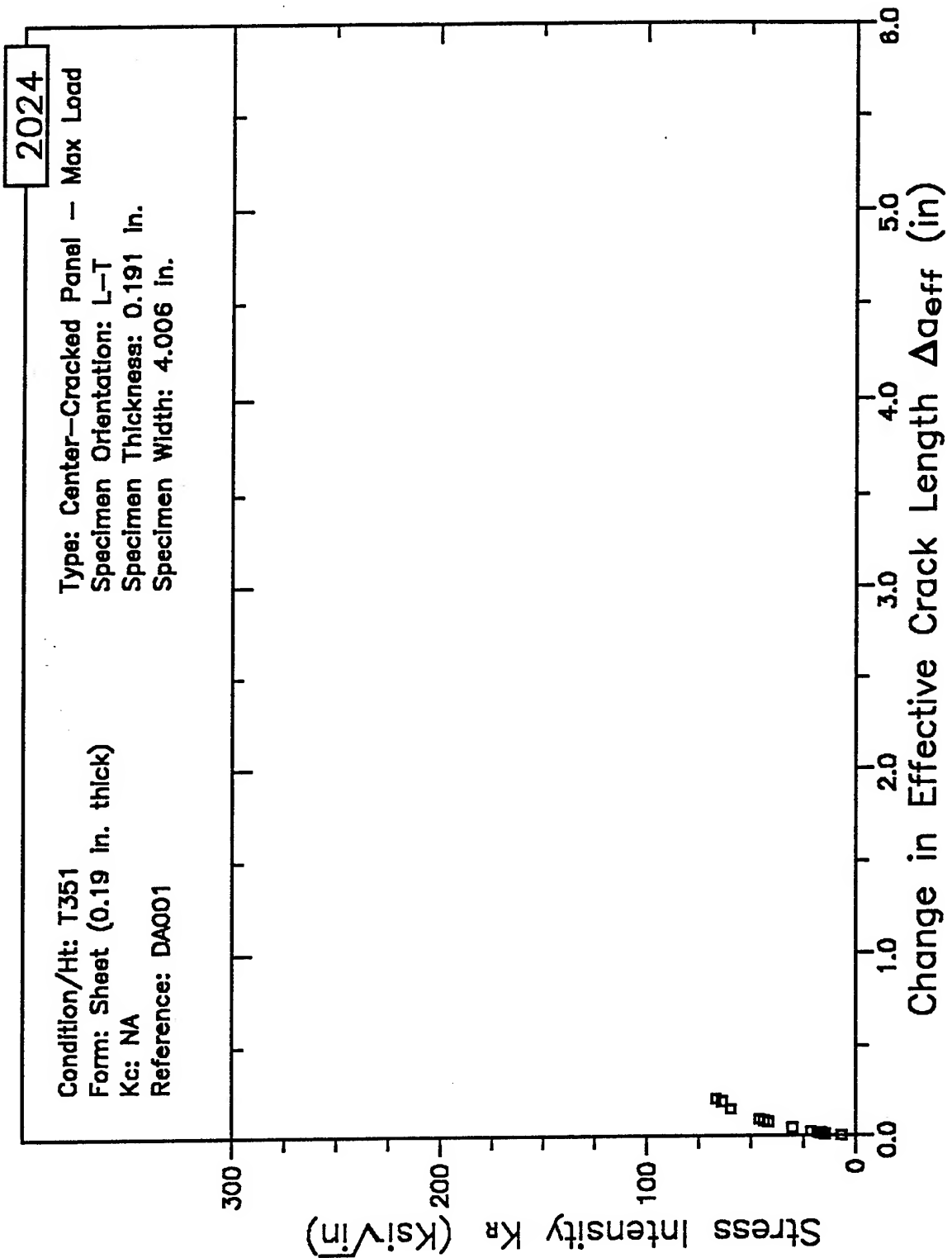


Figure 7.5.2.3.14

RESISTANCE CURVE



RESISTANCE CURVE

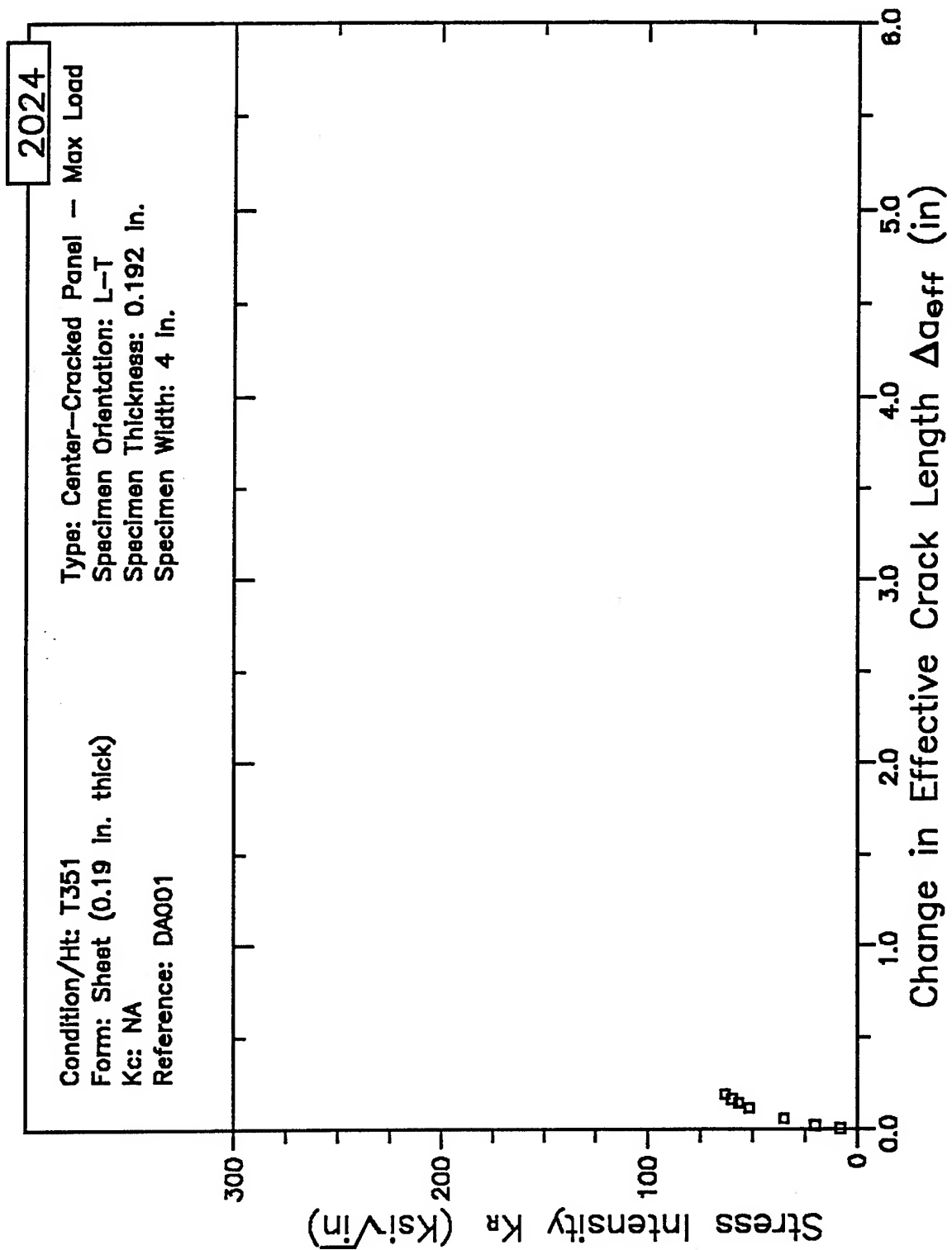


Figure 7.5.2.3.16

RESISTANCE CURVE

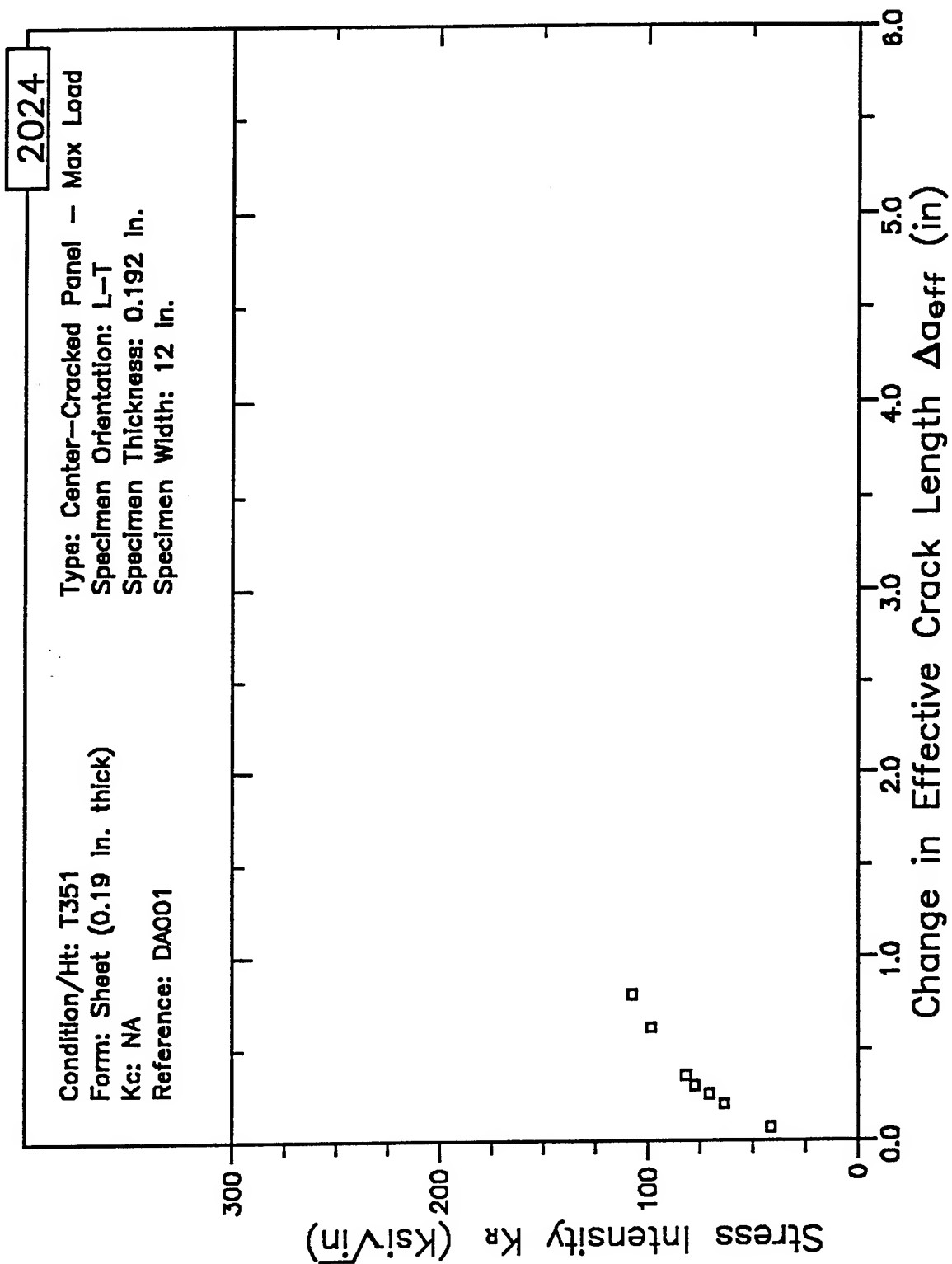


Figure 7.5.2.3.17

RESISTANCE CURVE

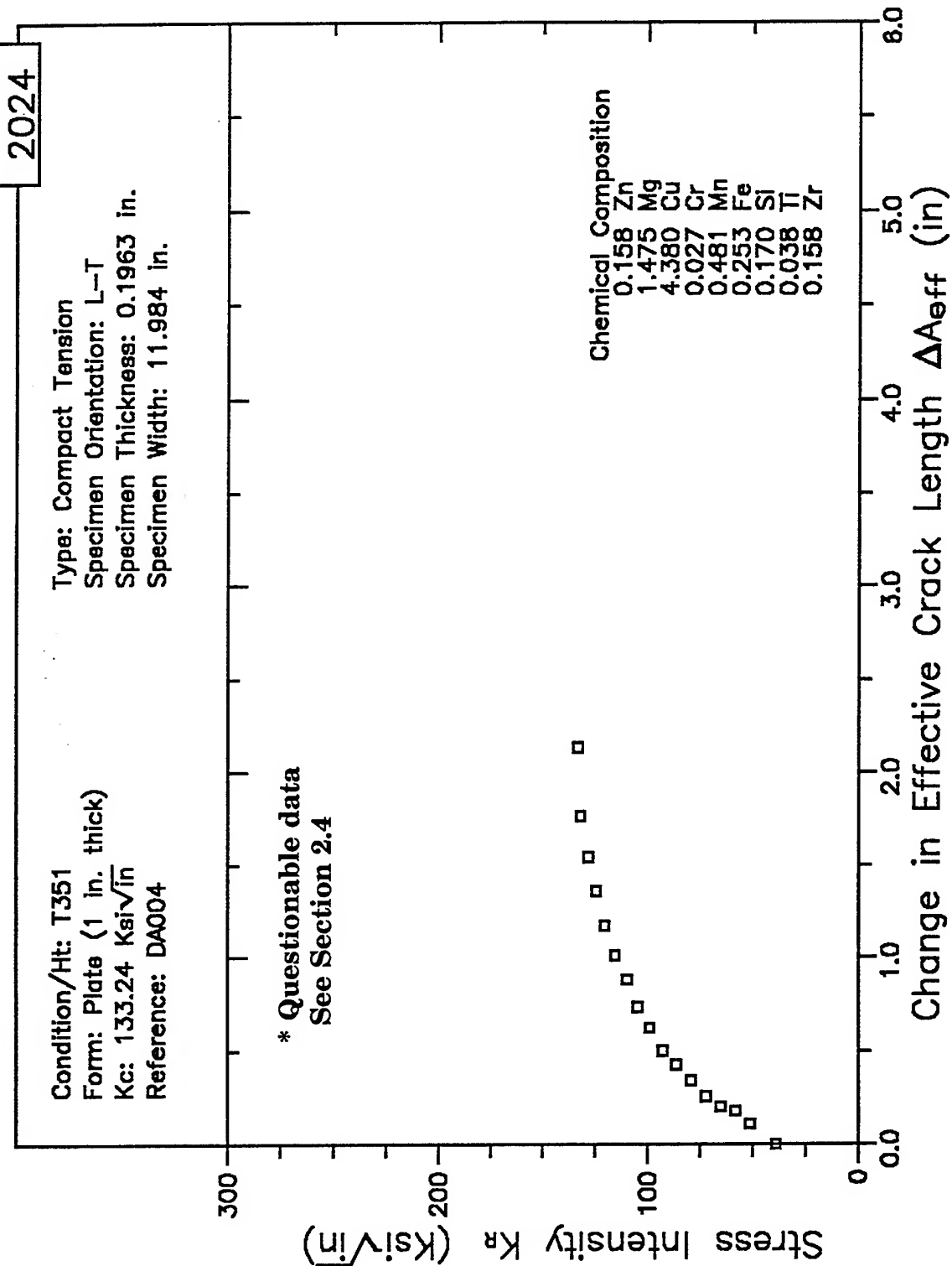


Figure 7.5.2.3.18

RESISTANCE CURVE

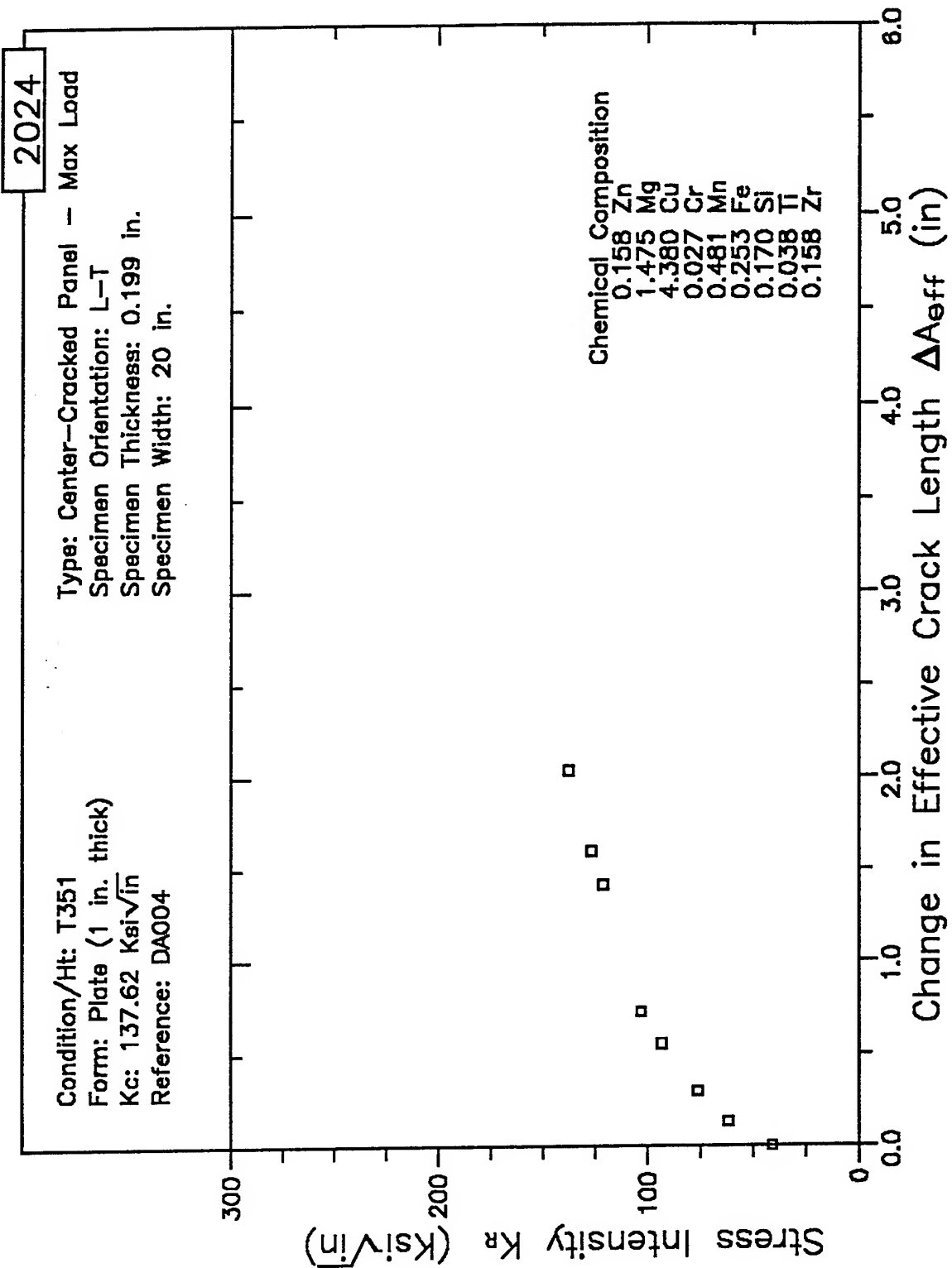


Figure 7.5.2.3.19

RESISTANCE CURVE

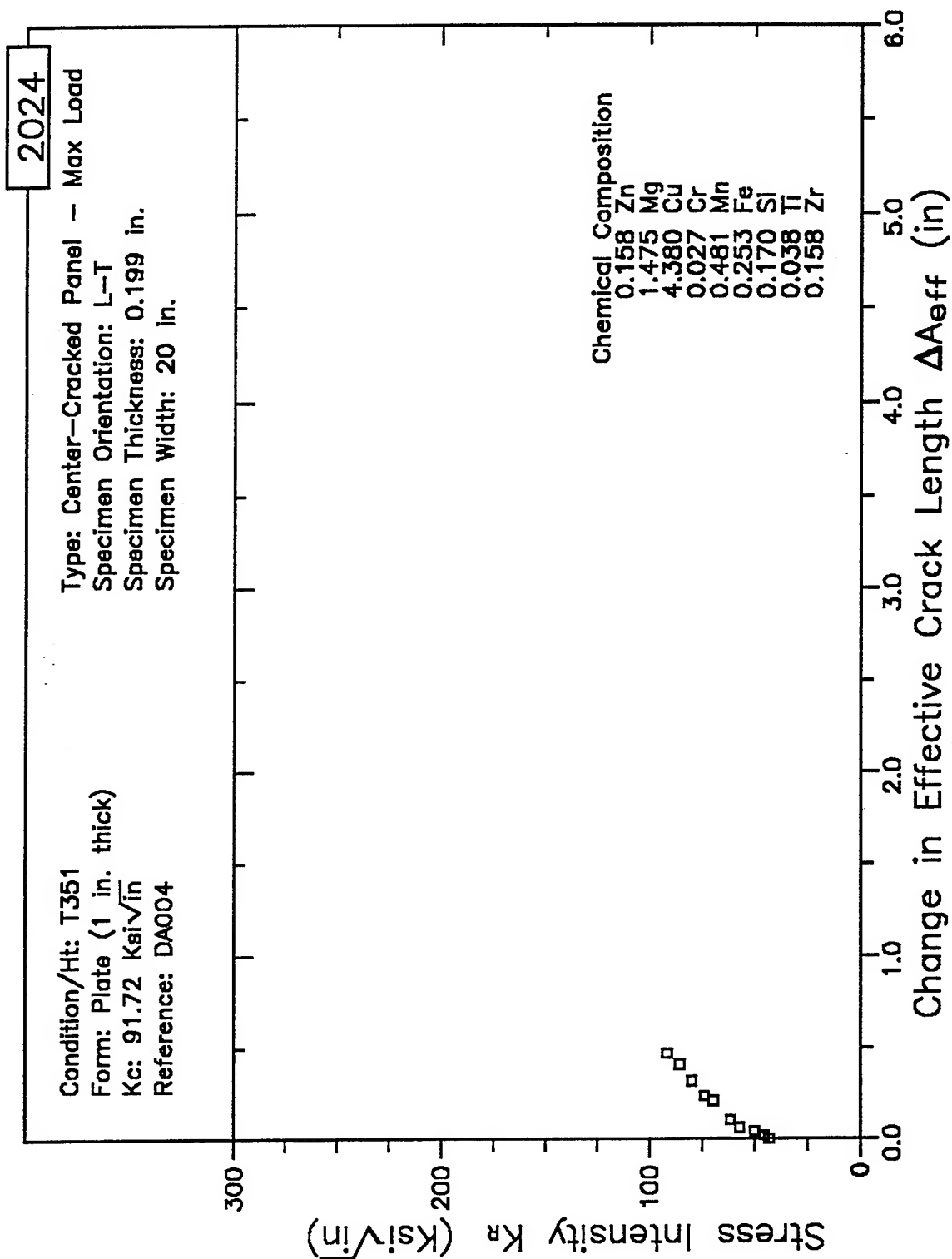


Figure 7.5.2.3.20

RESISTANCE CURVE

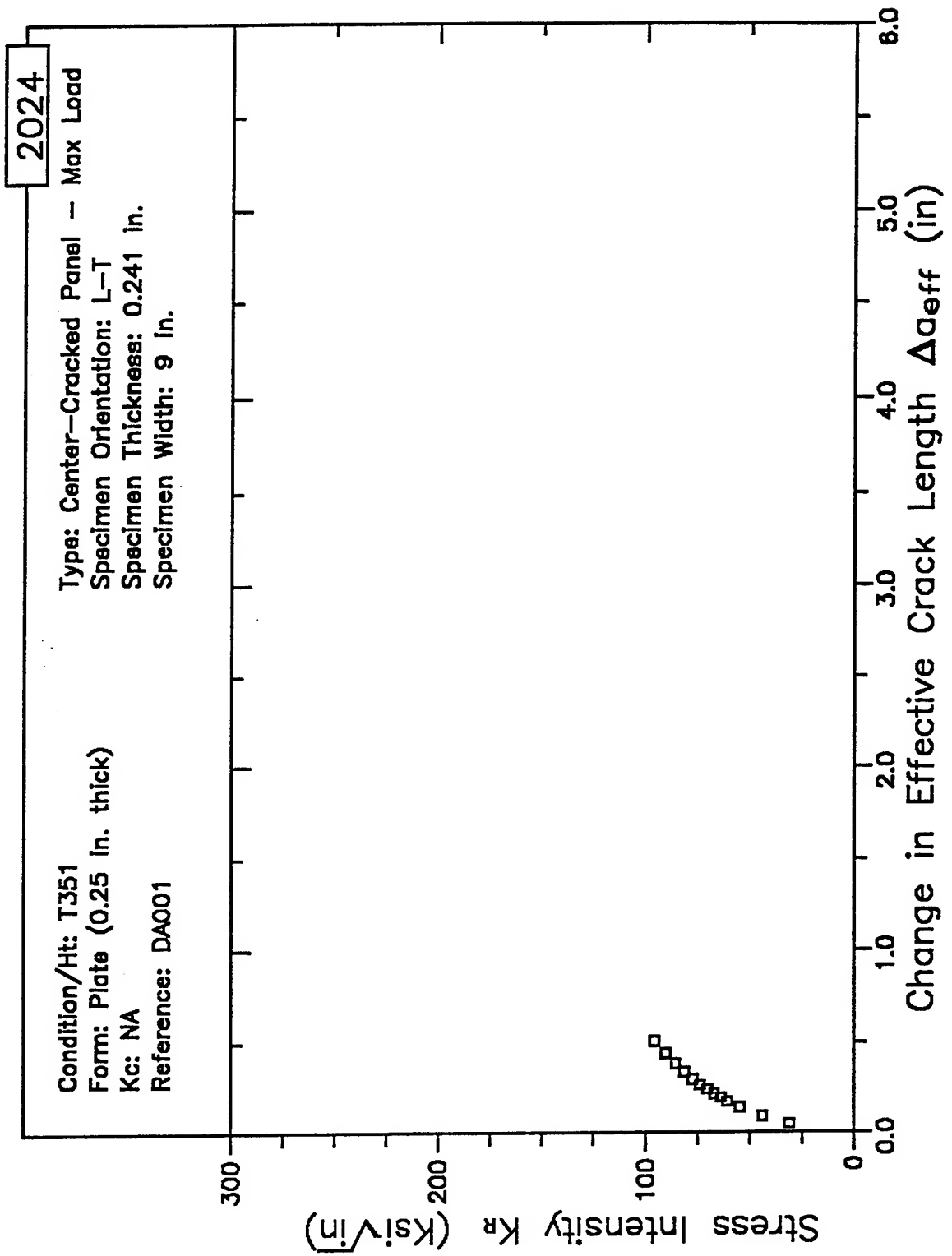


Figure 7.5.2.3.21

RESISTANCE CURVE

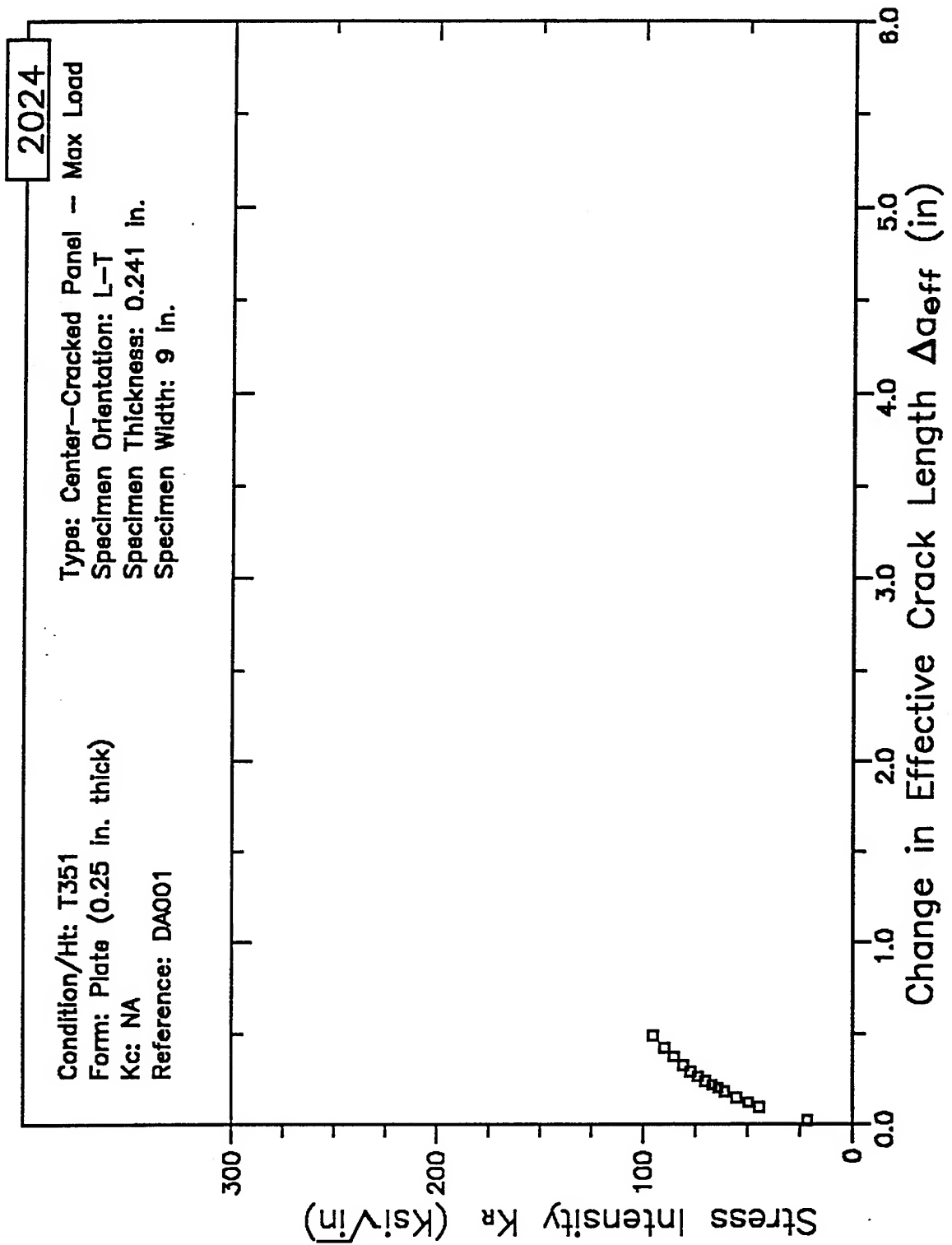


Figure 7.5.2.3.22

RESISTANCE CURVE

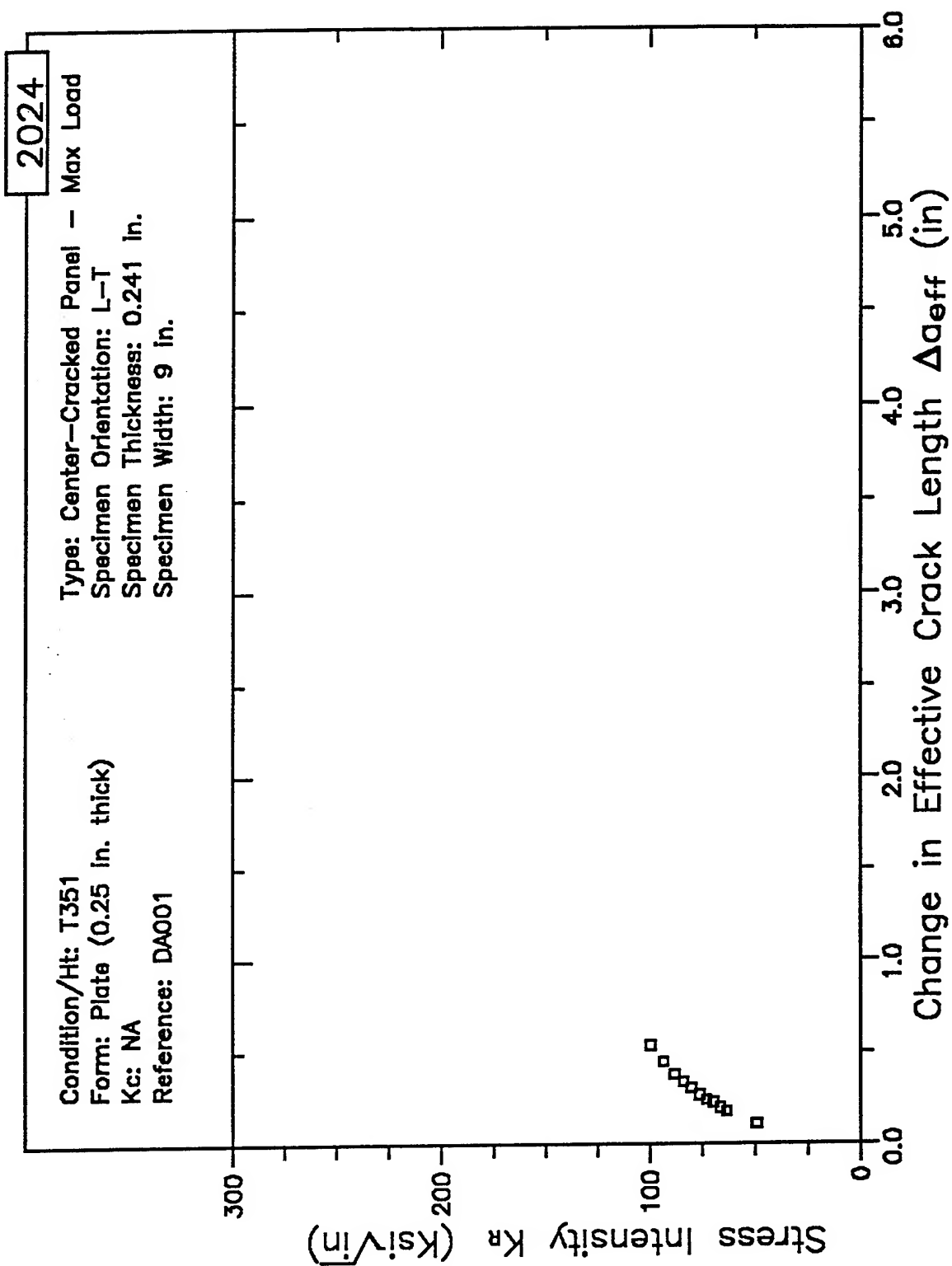


Figure 7.5.2.3.23

RESISTANCE CURVE

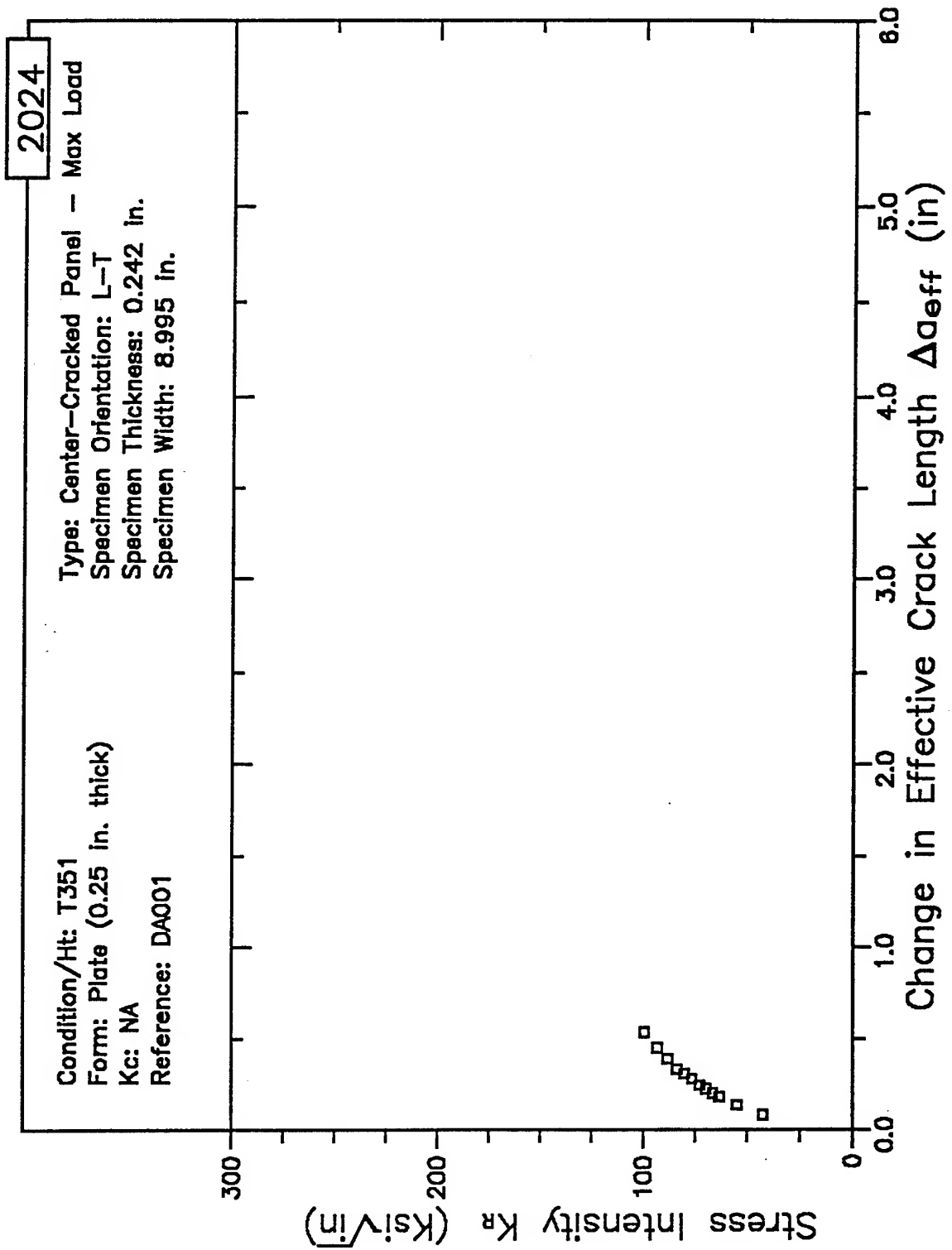


Figure 7.5.2.3.24

RESISTANCE CURVE

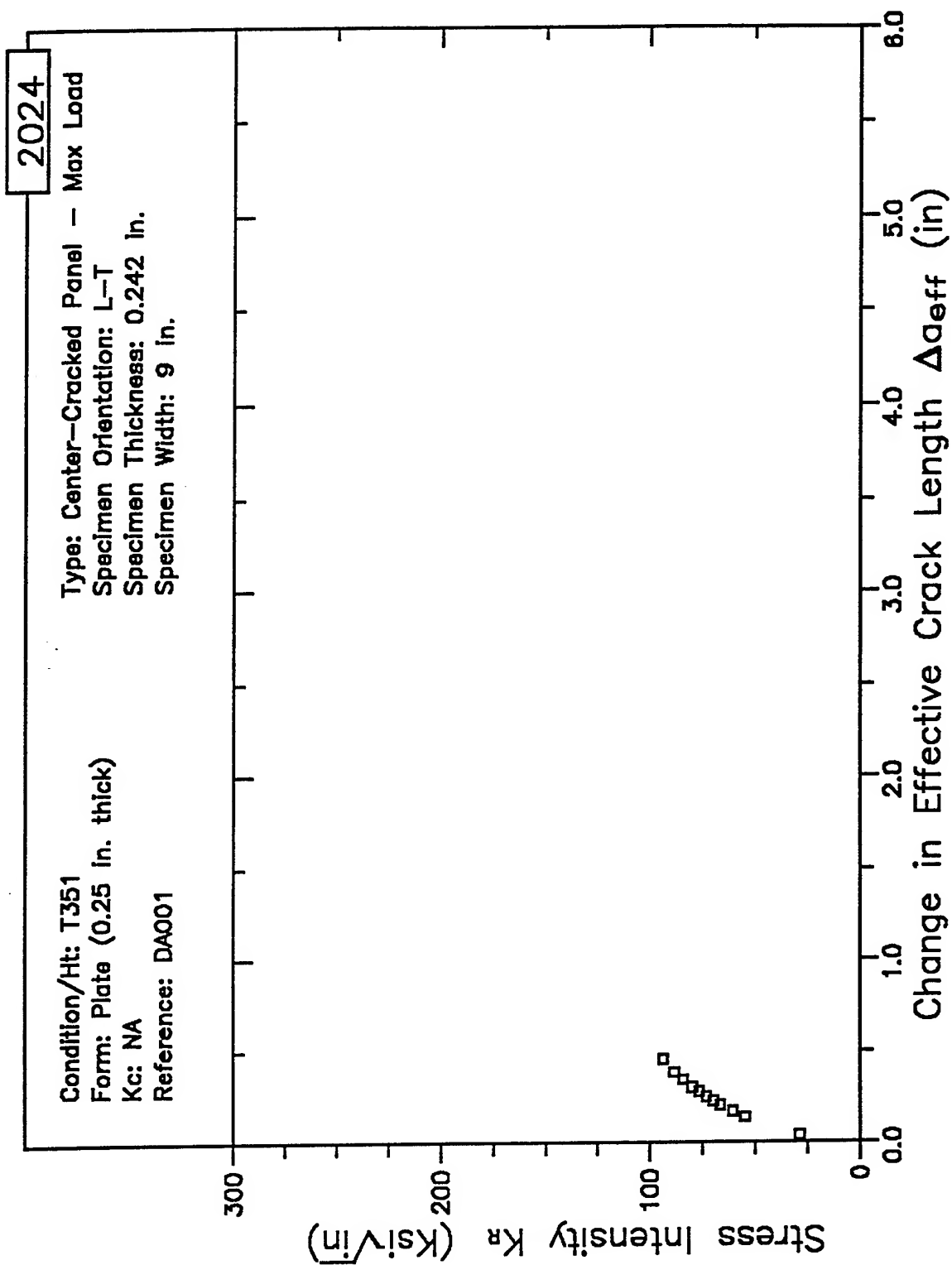


Figure 7.5.2.3.25

RESISTANCE CURVE

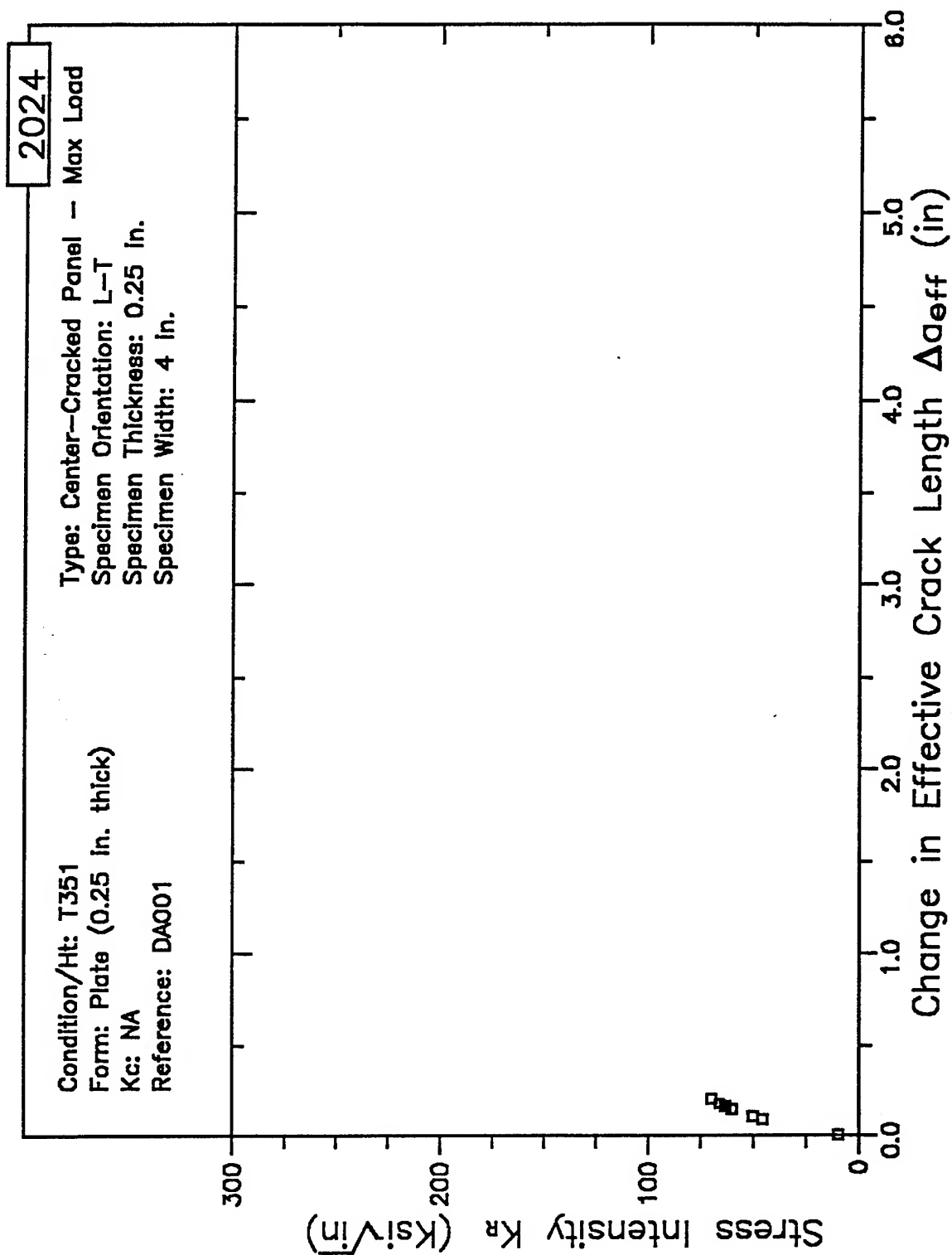


Figure 7.5.2.3.26

RESISTANCE CURVE

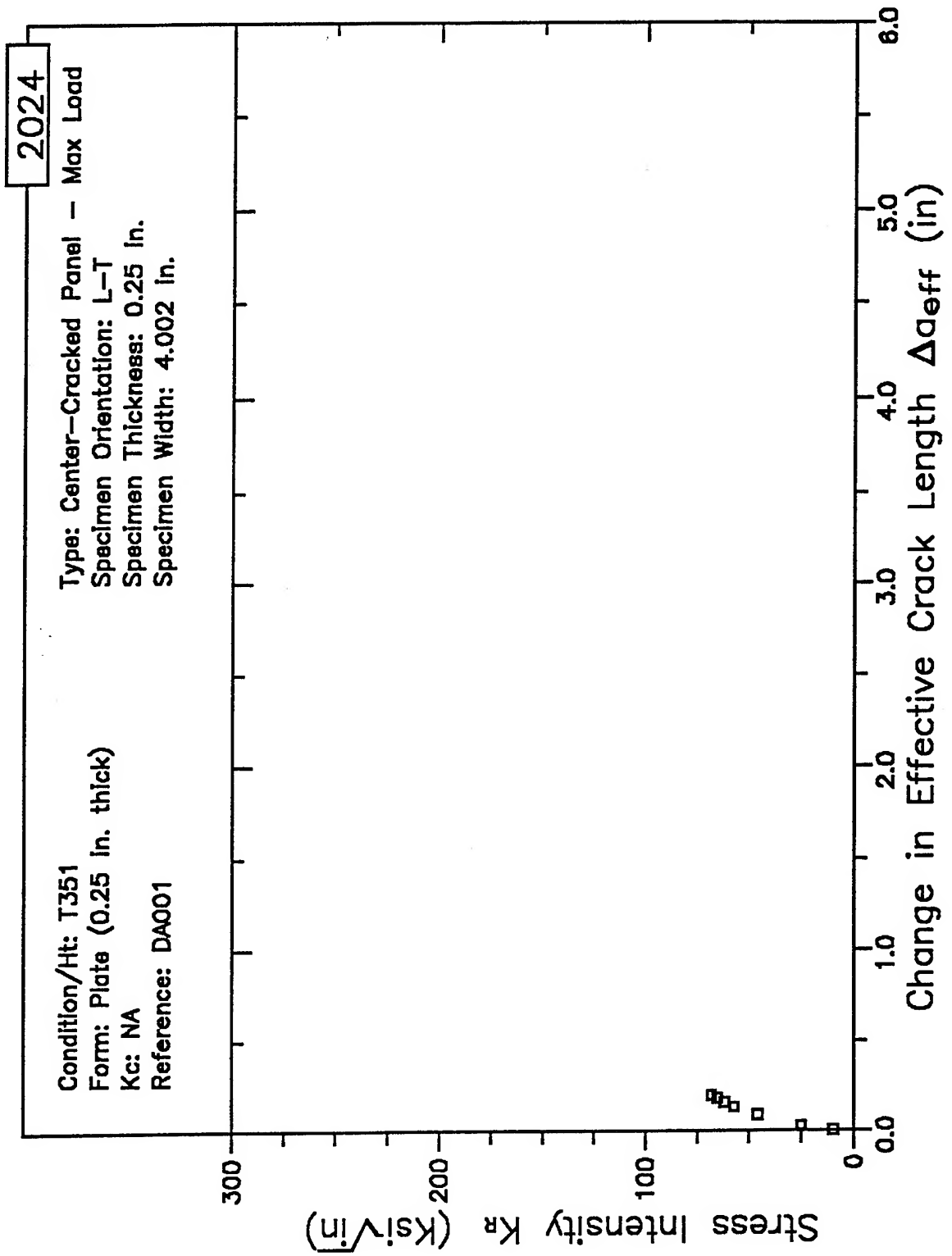


Figure 7.5.2.3.27

RESISTANCE CURVE

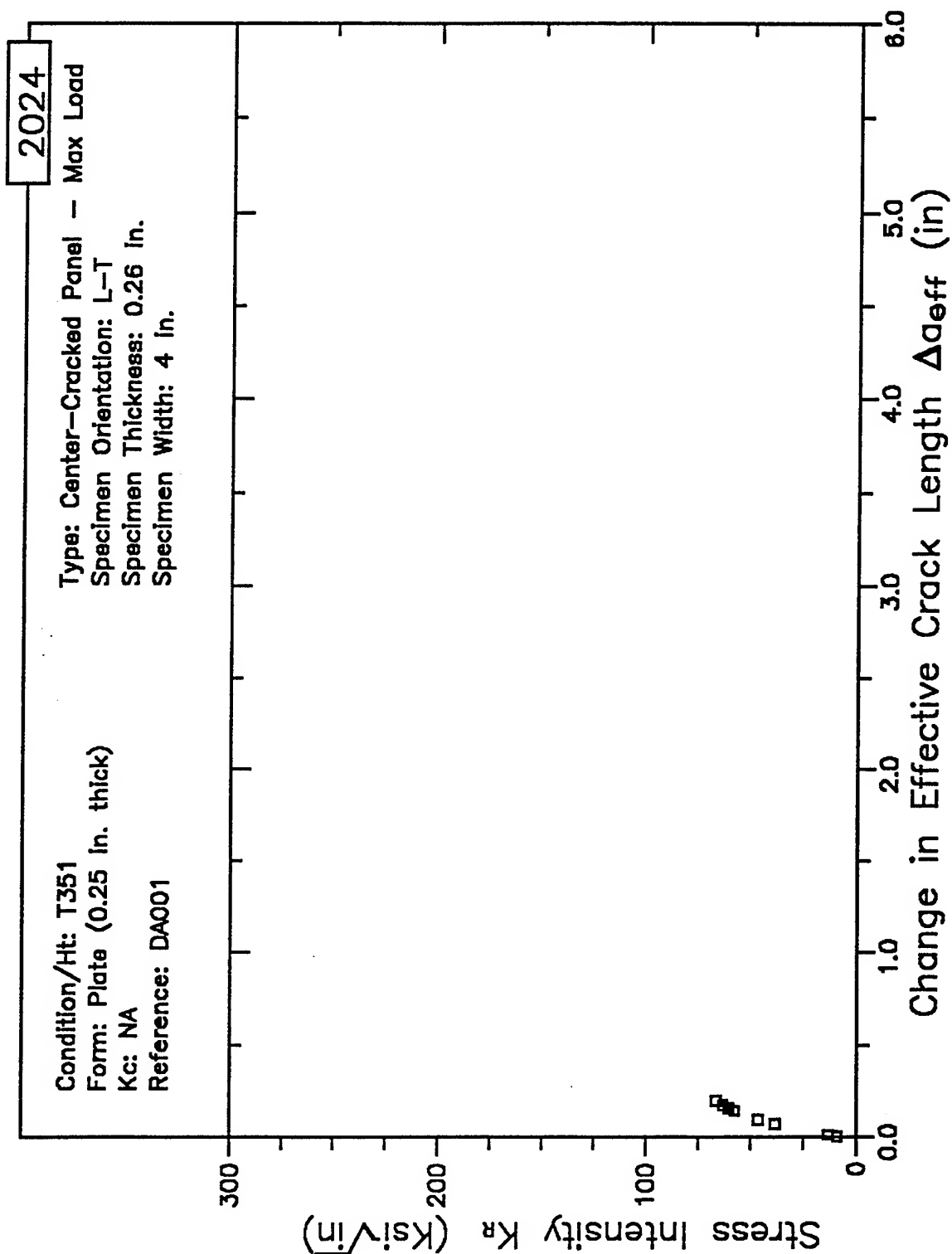


Figure 7.5.2.3.28

RESISTANCE CURVE

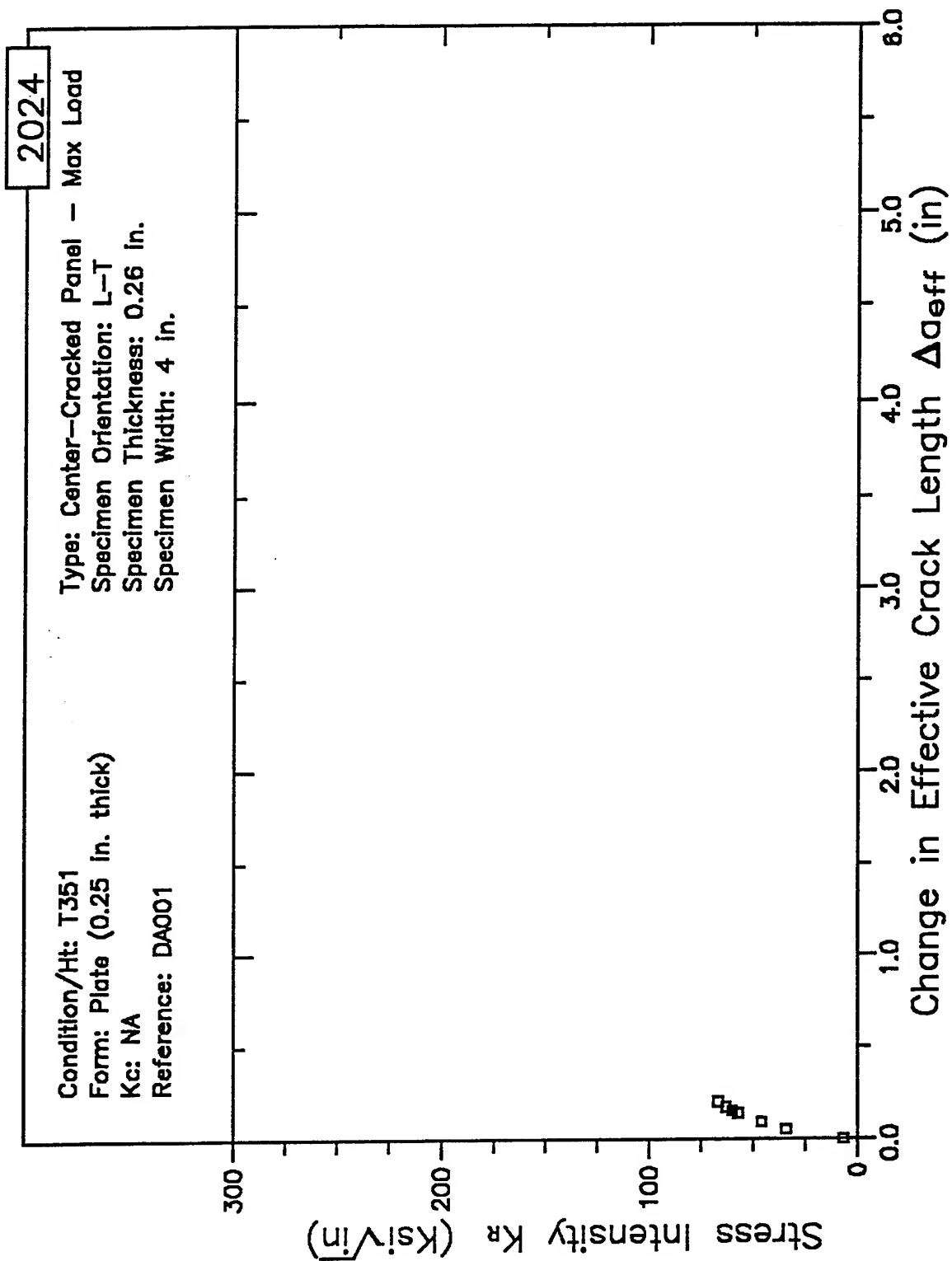


Figure 7.5.2.3.29

RESISTANCE CURVE

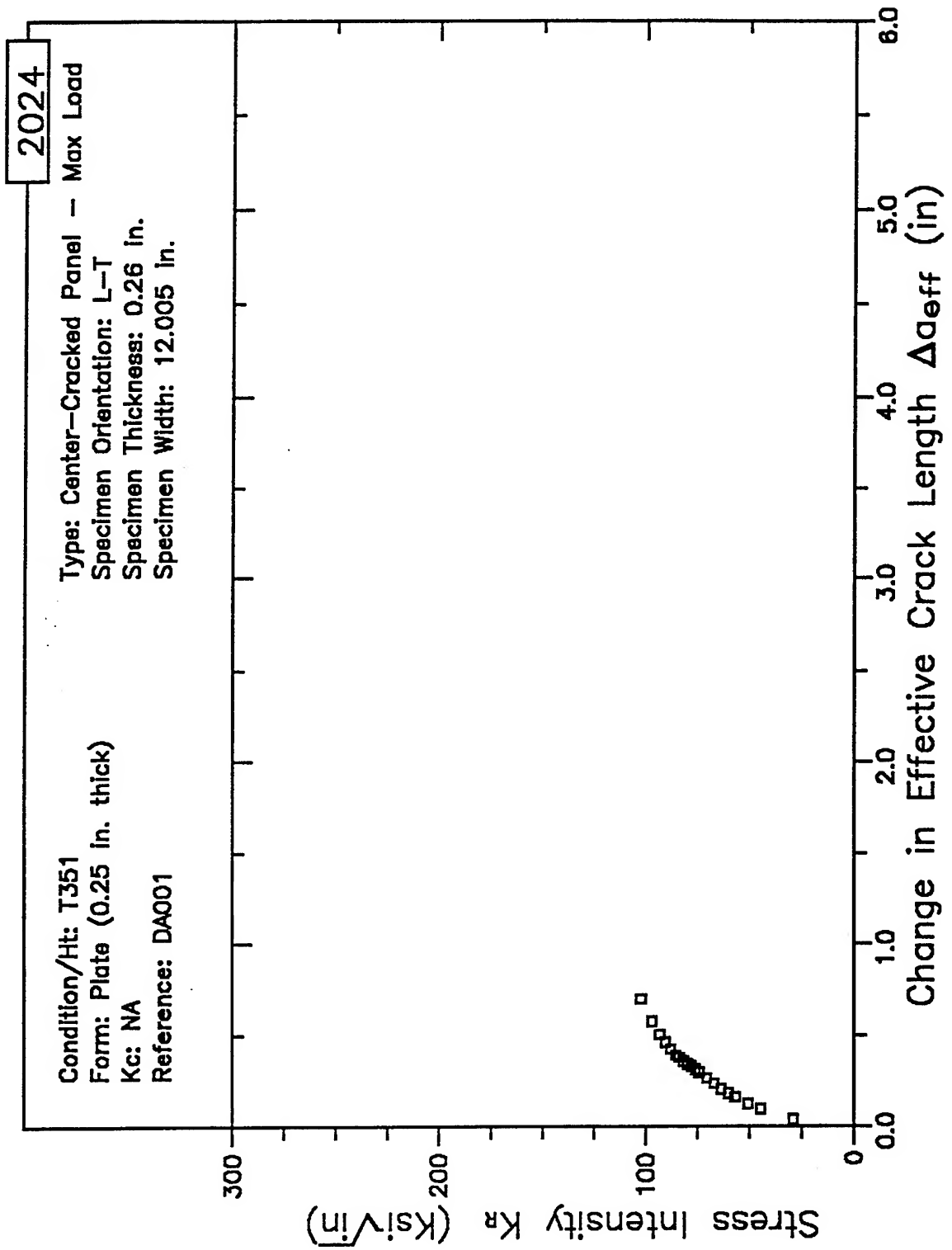


Figure 7.5.2.3.30

RESISTANCE CURVE

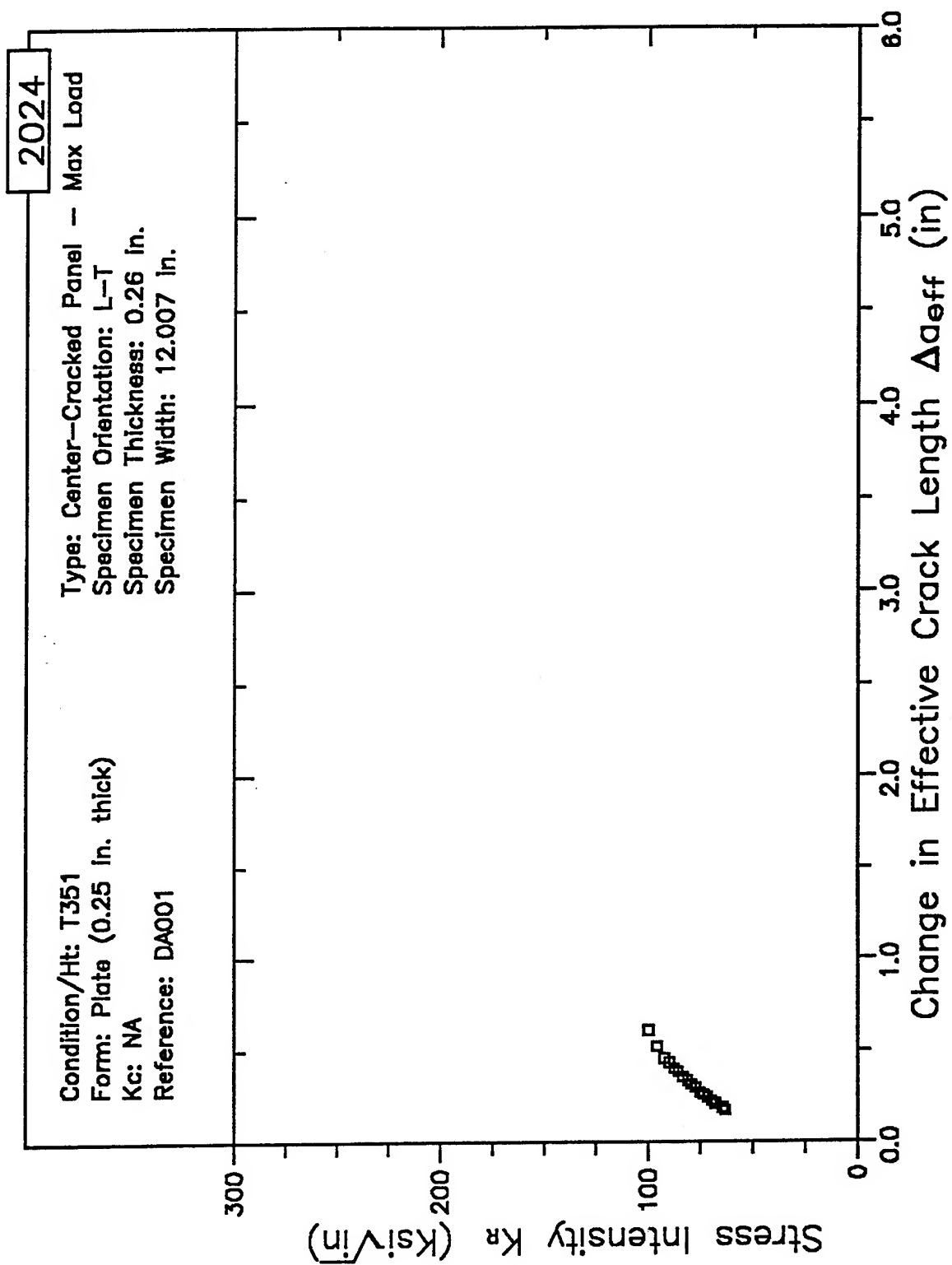


Figure 7.5.2.3.31

RESISTANCE CURVE

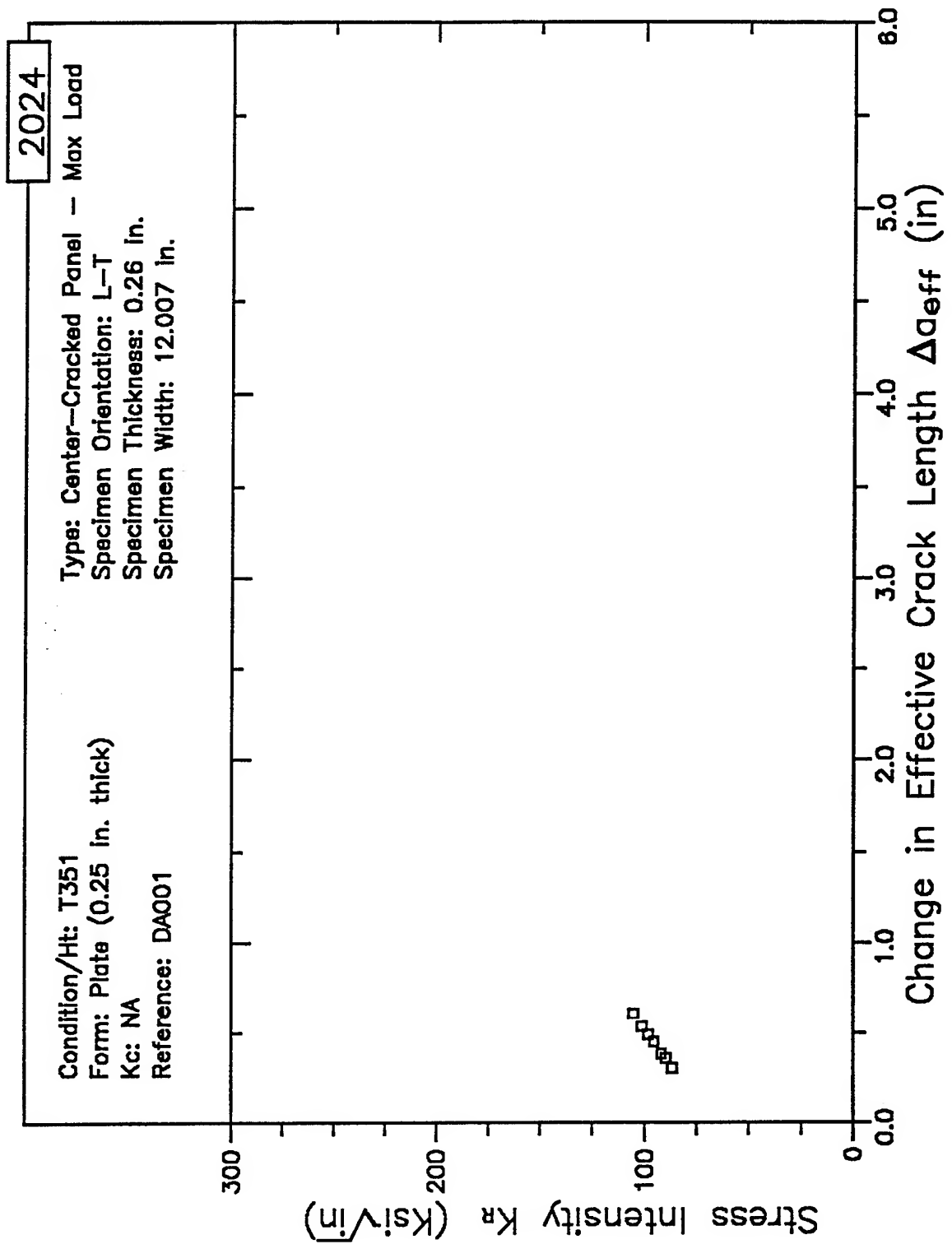


Figure 7.5.2.3.32

RESISTANCE CURVE

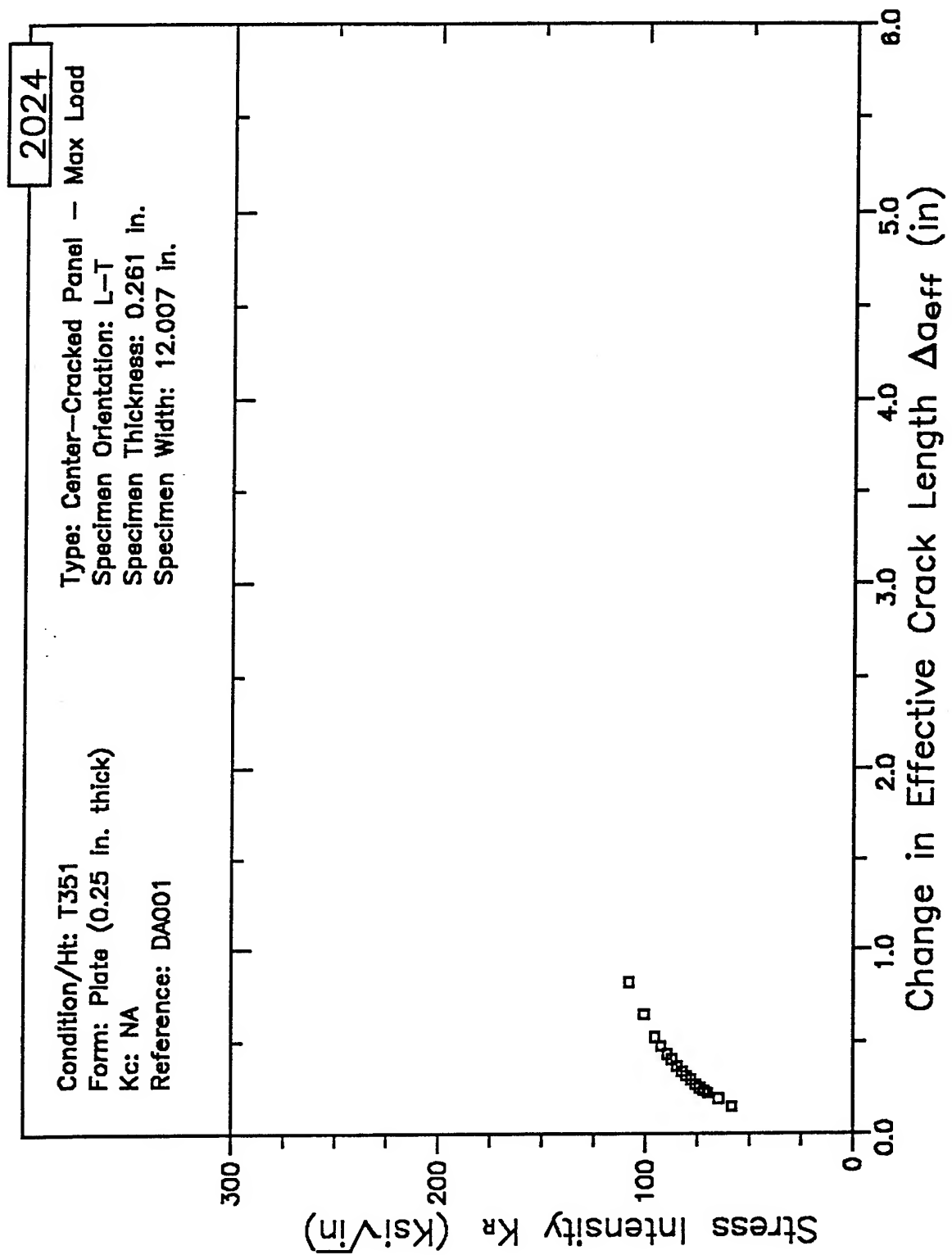


Figure 7.5.2.3.33

RESISTANCE CURVE

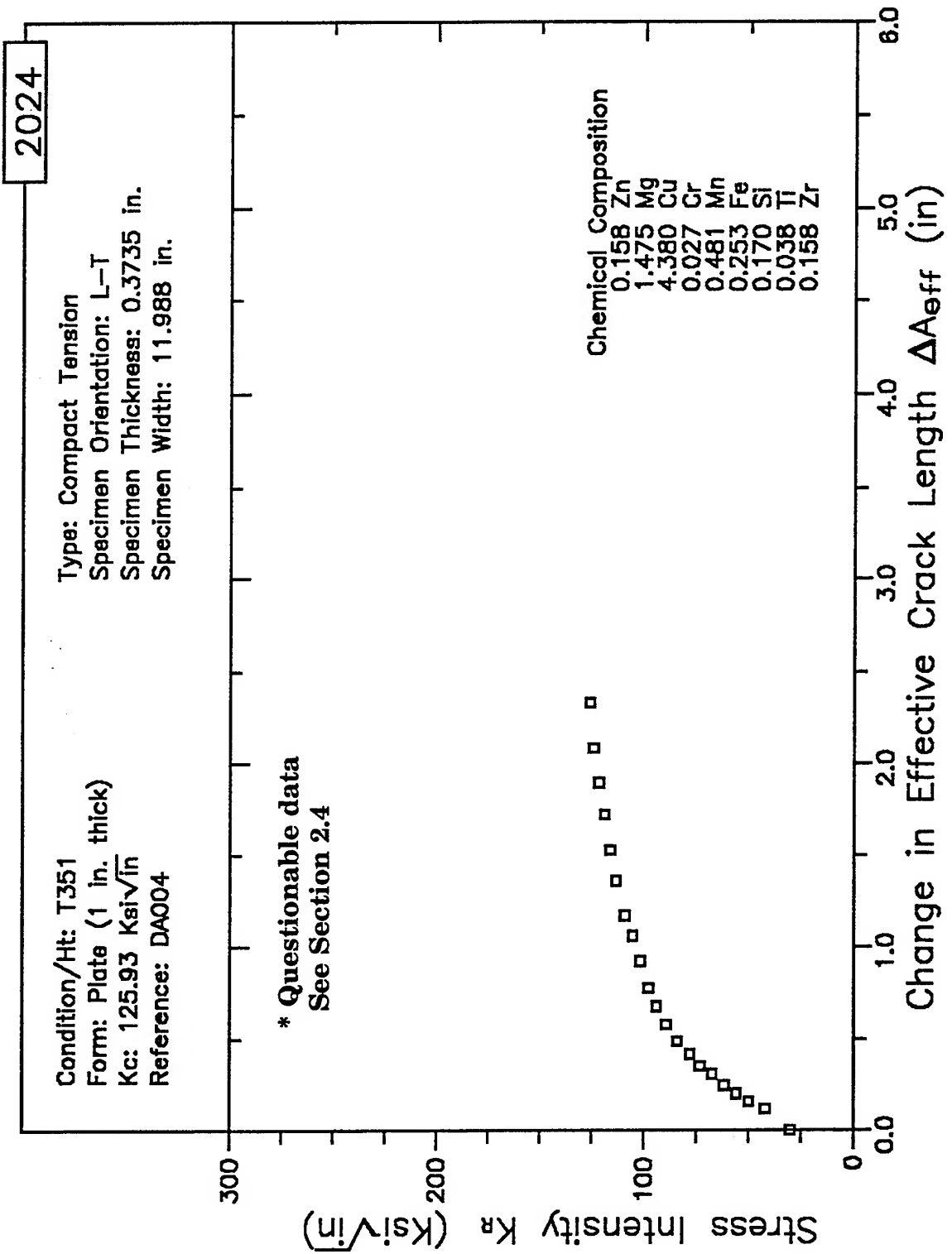


Figure 7.5.2.3.34

RESISTANCE CURVE

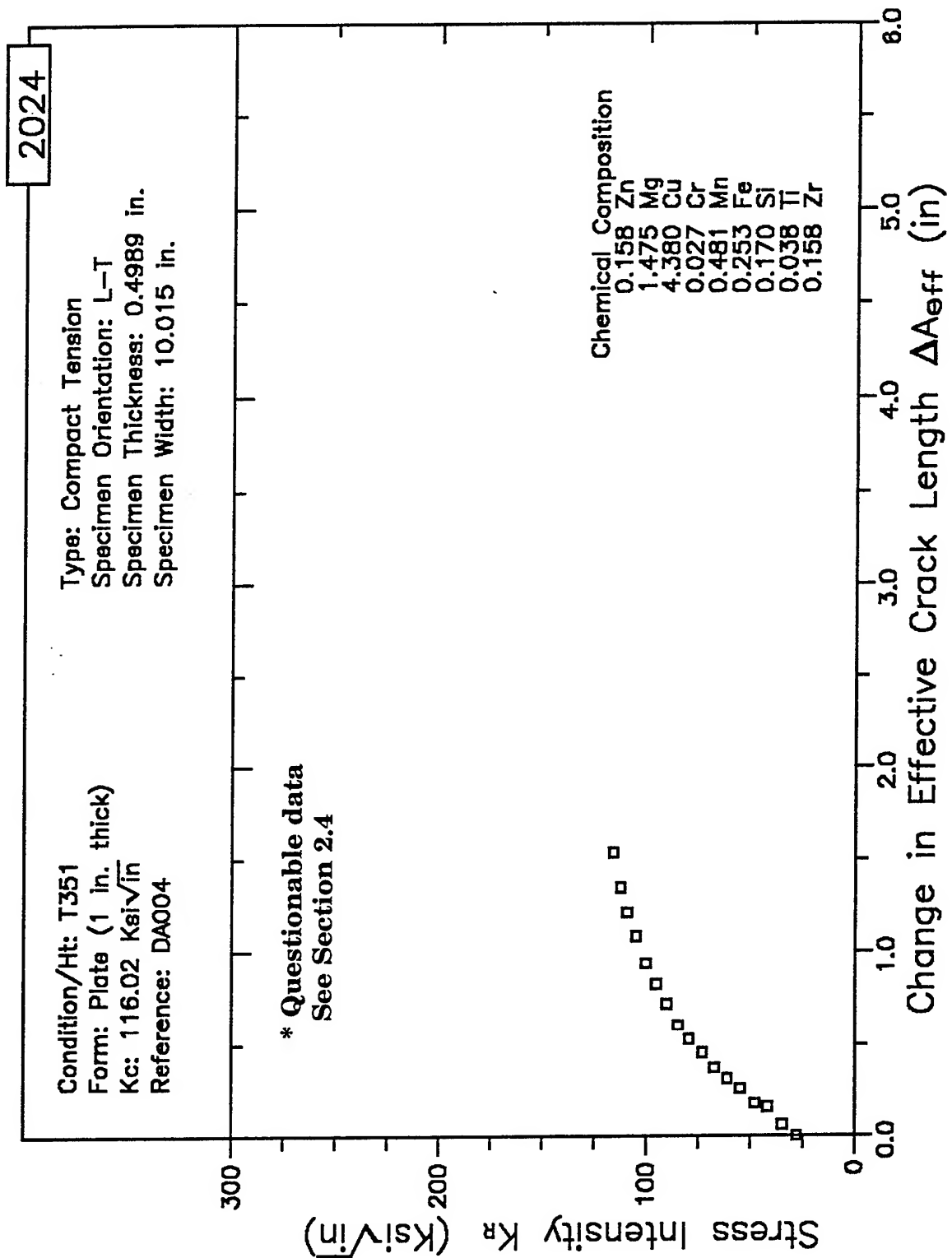


Figure 7.5.2.3.35

RESISTANCE CURVE

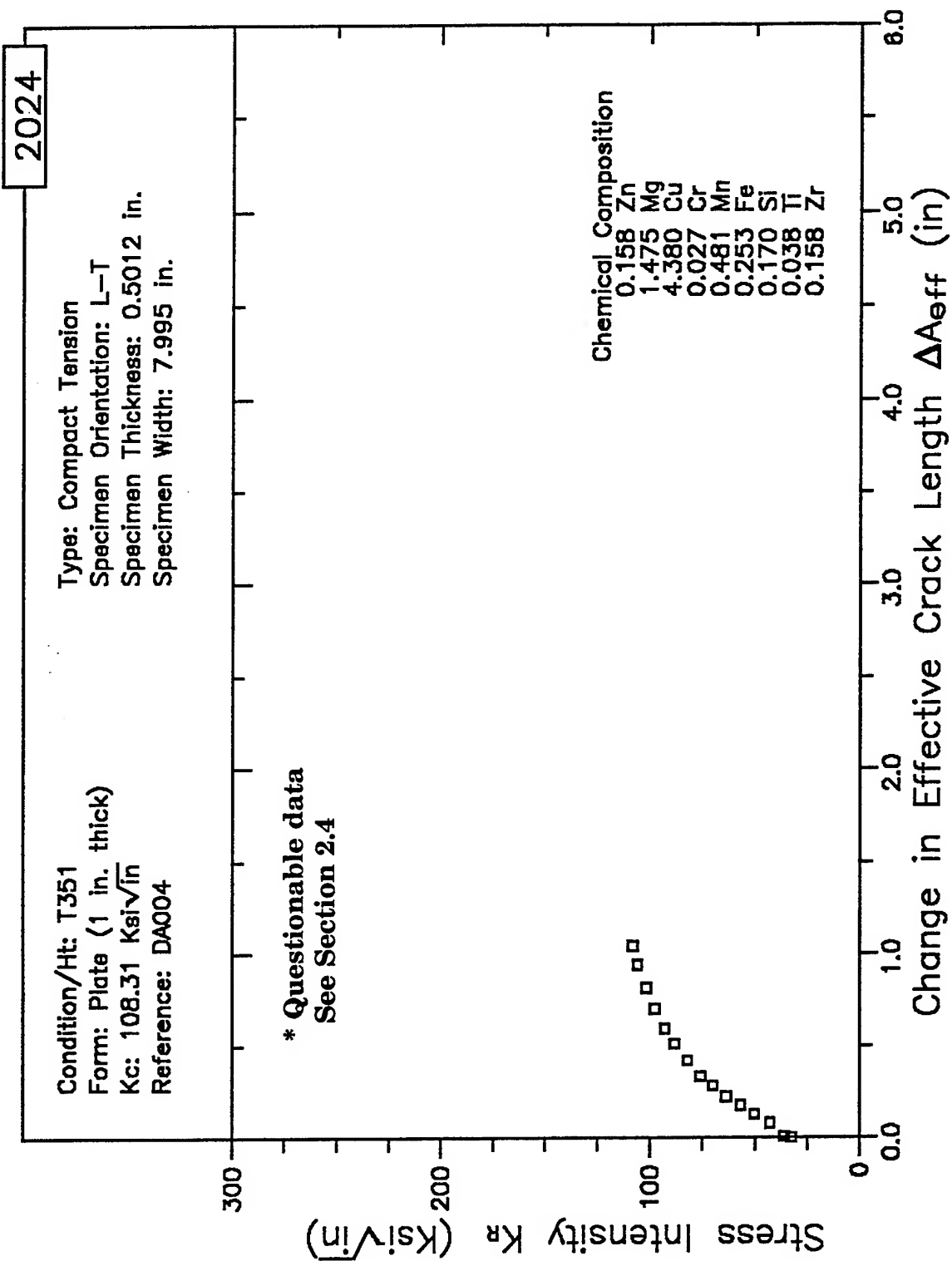


Figure 7.5.2.3.36

RESISTANCE CURVE

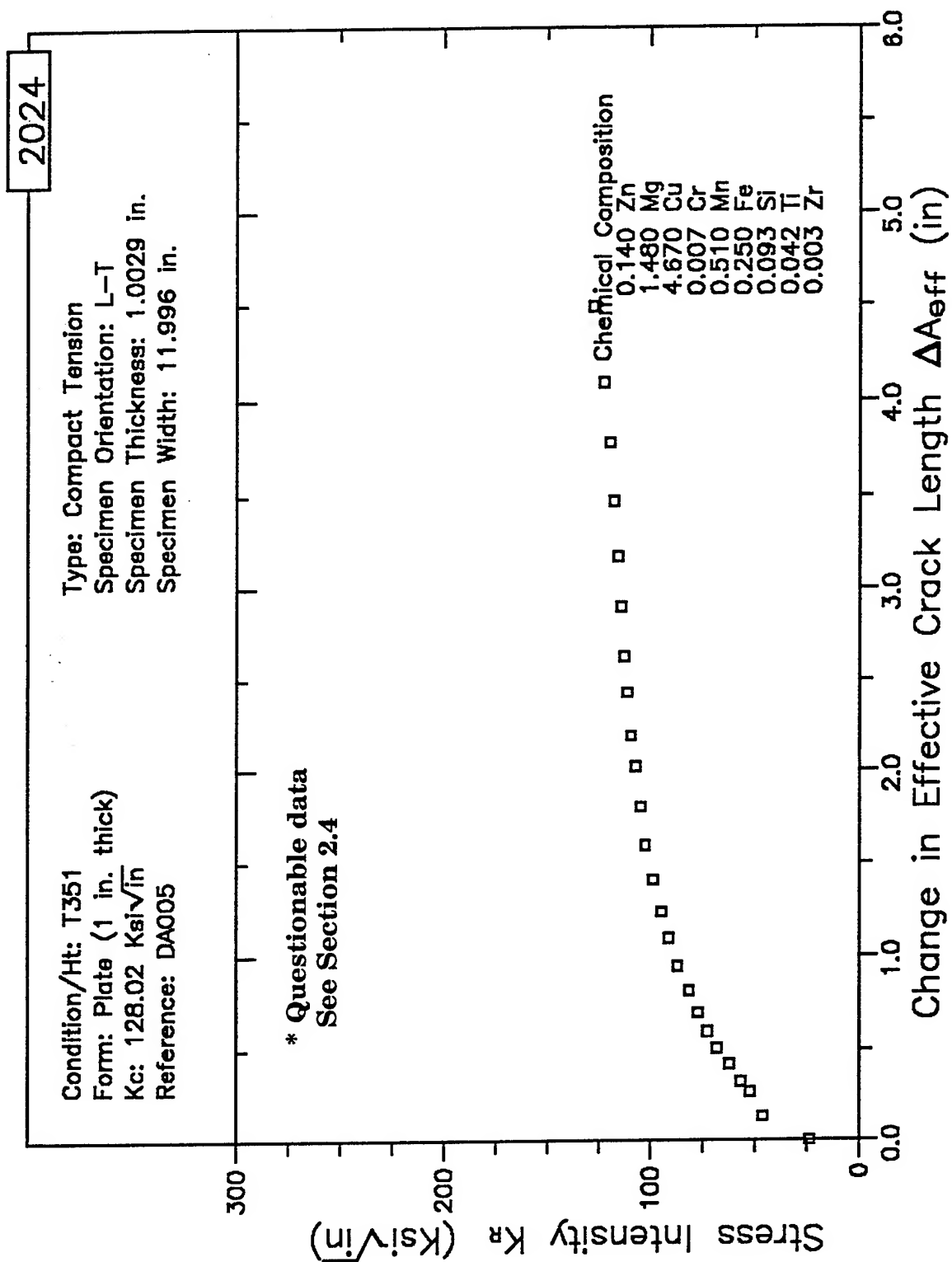


Figure 7.5.2.3.37

RESISTANCE CURVE

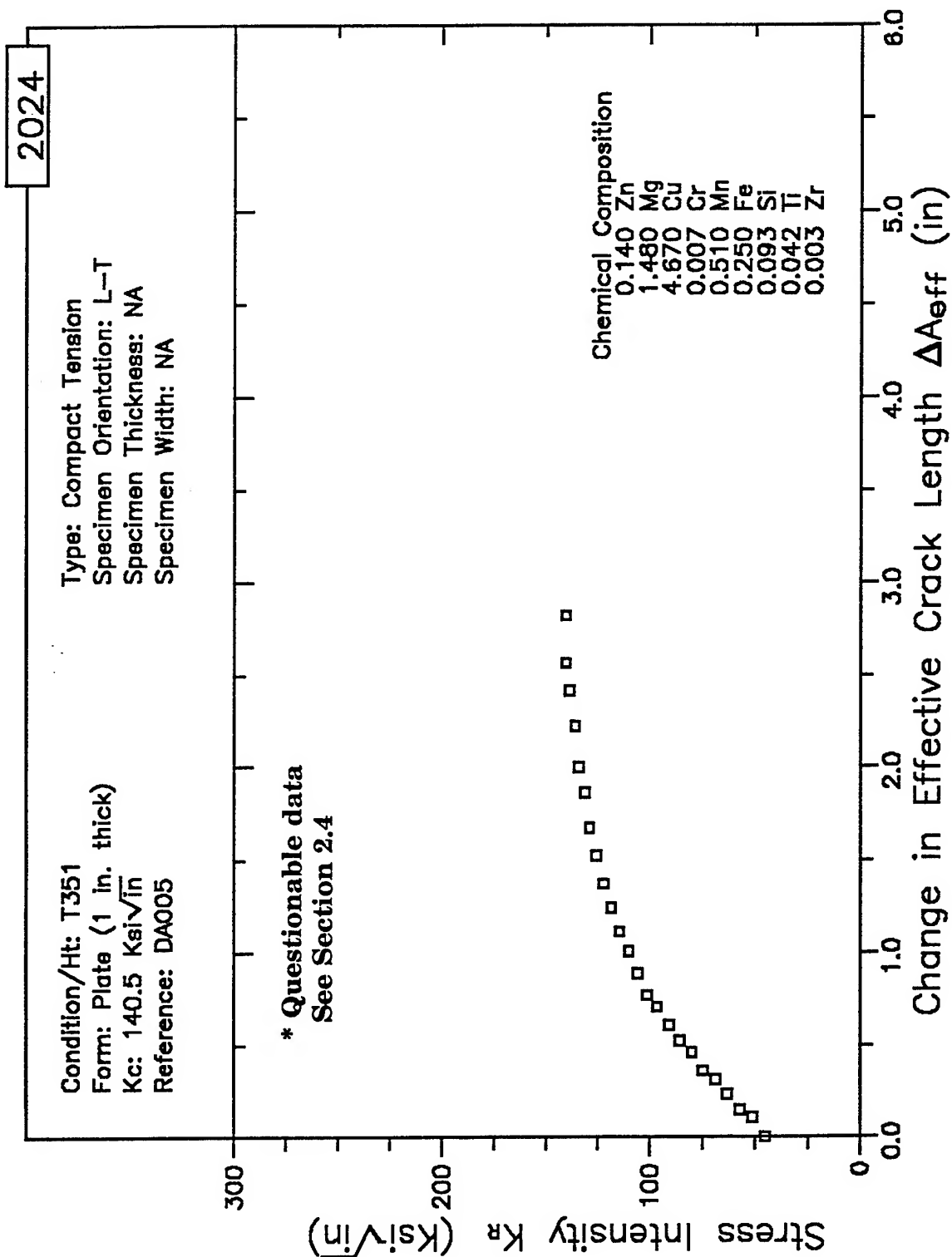


Figure 7.5.2.3.38

RESISTANCE CURVE

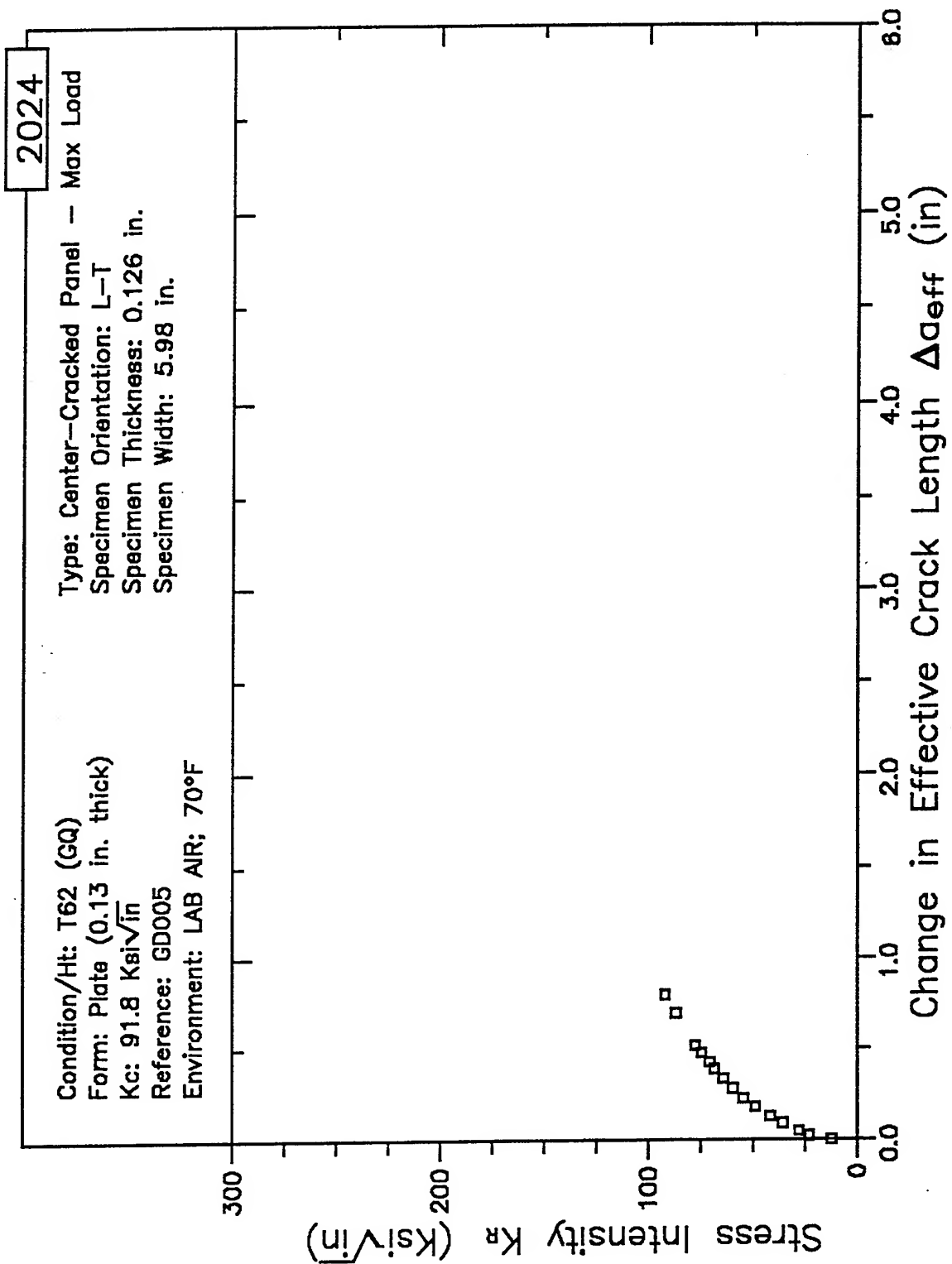


Figure 7.5.2.3.39

RESISTANCE CURVE

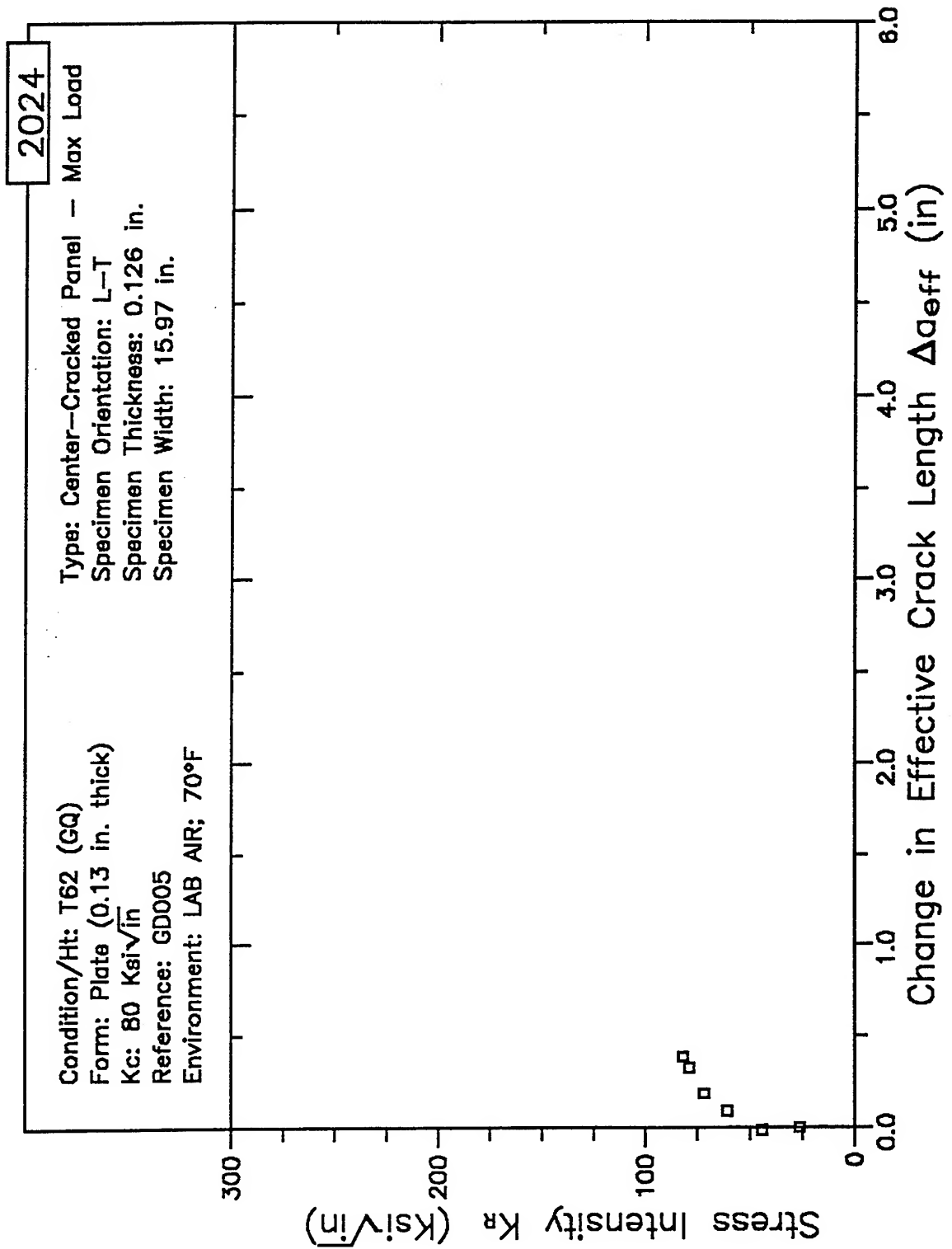


Figure 7.5.2.3.40

RESISTANCE CURVE

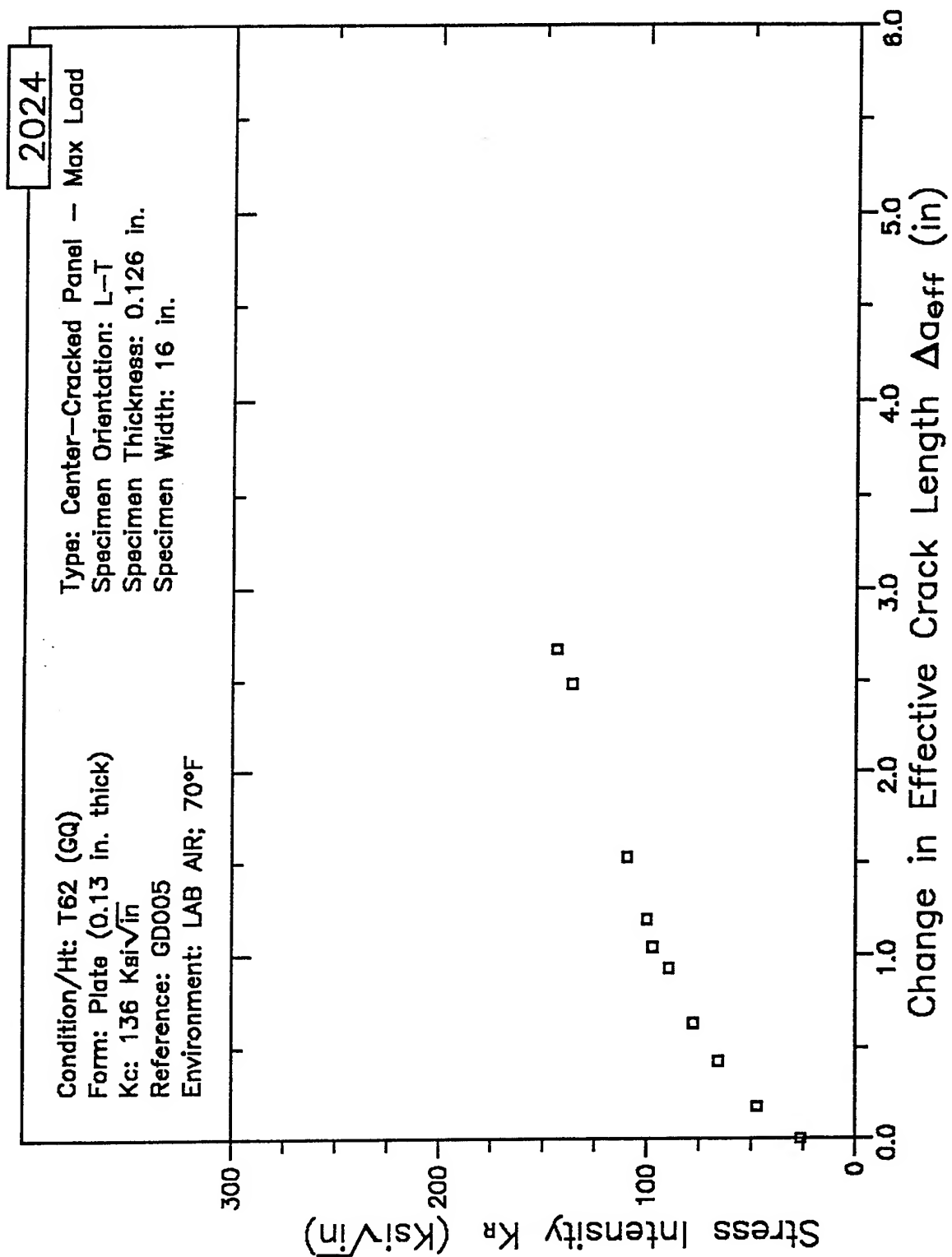


Figure 7.5.2.3.41

RESISTANCE CURVE

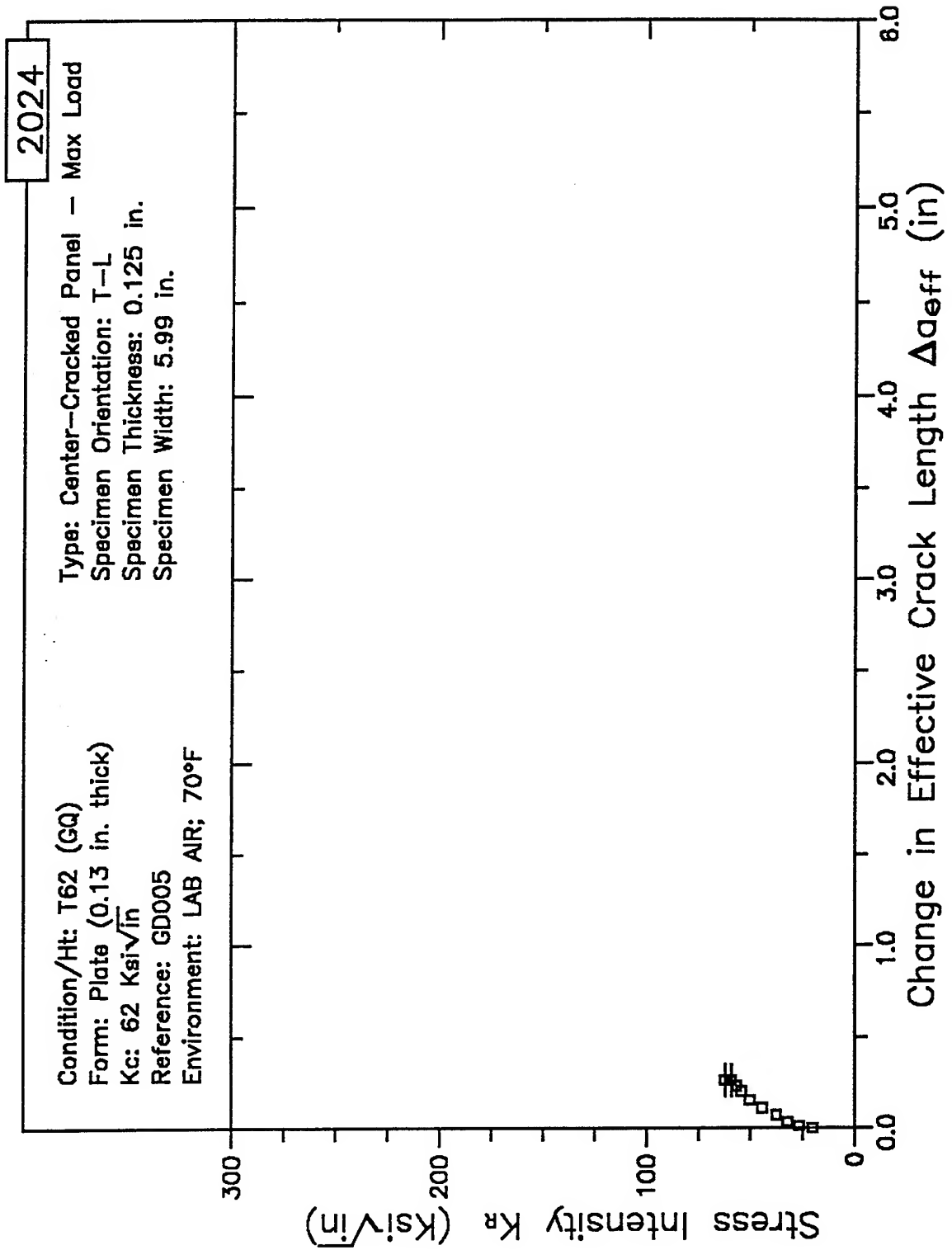


Figure 7.5.2.3.42

RESISTANCE CURVE

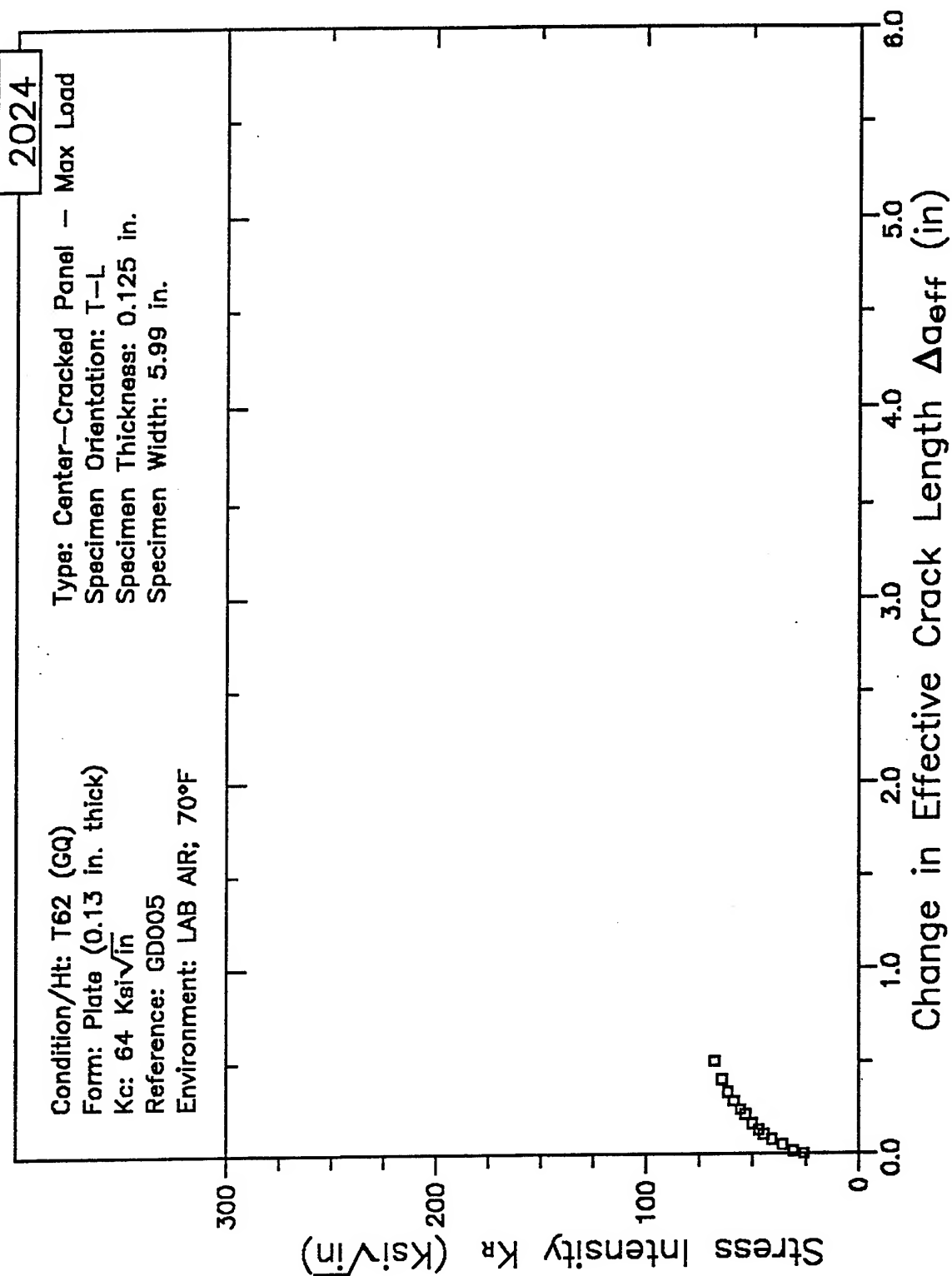


Figure 7.5.2.3.43

RESISTANCE CURVE

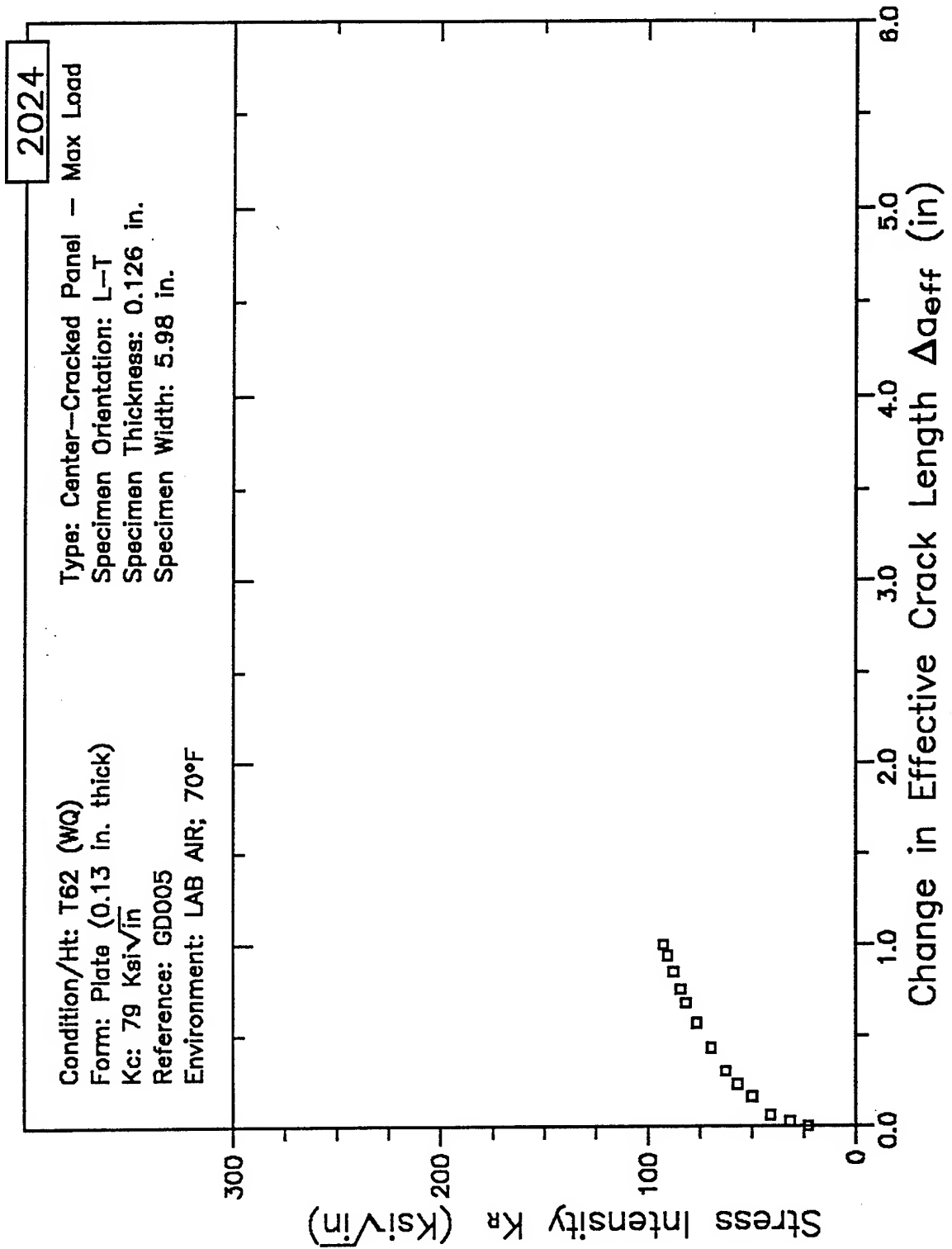


Figure 7.5.2.3.44

RESISTANCE CURVE

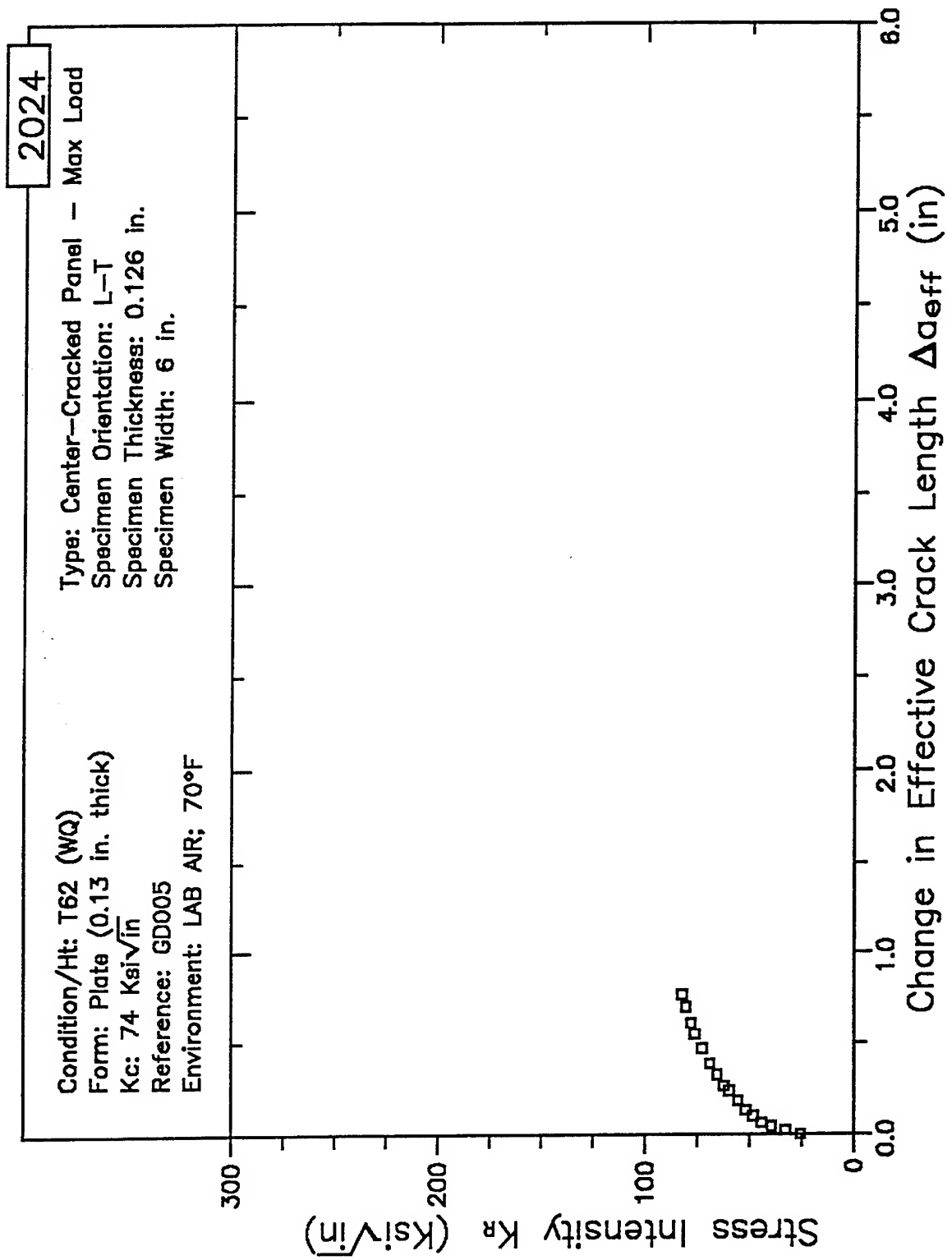


Figure 7.5.2.3.45

RESISTANCE CURVE

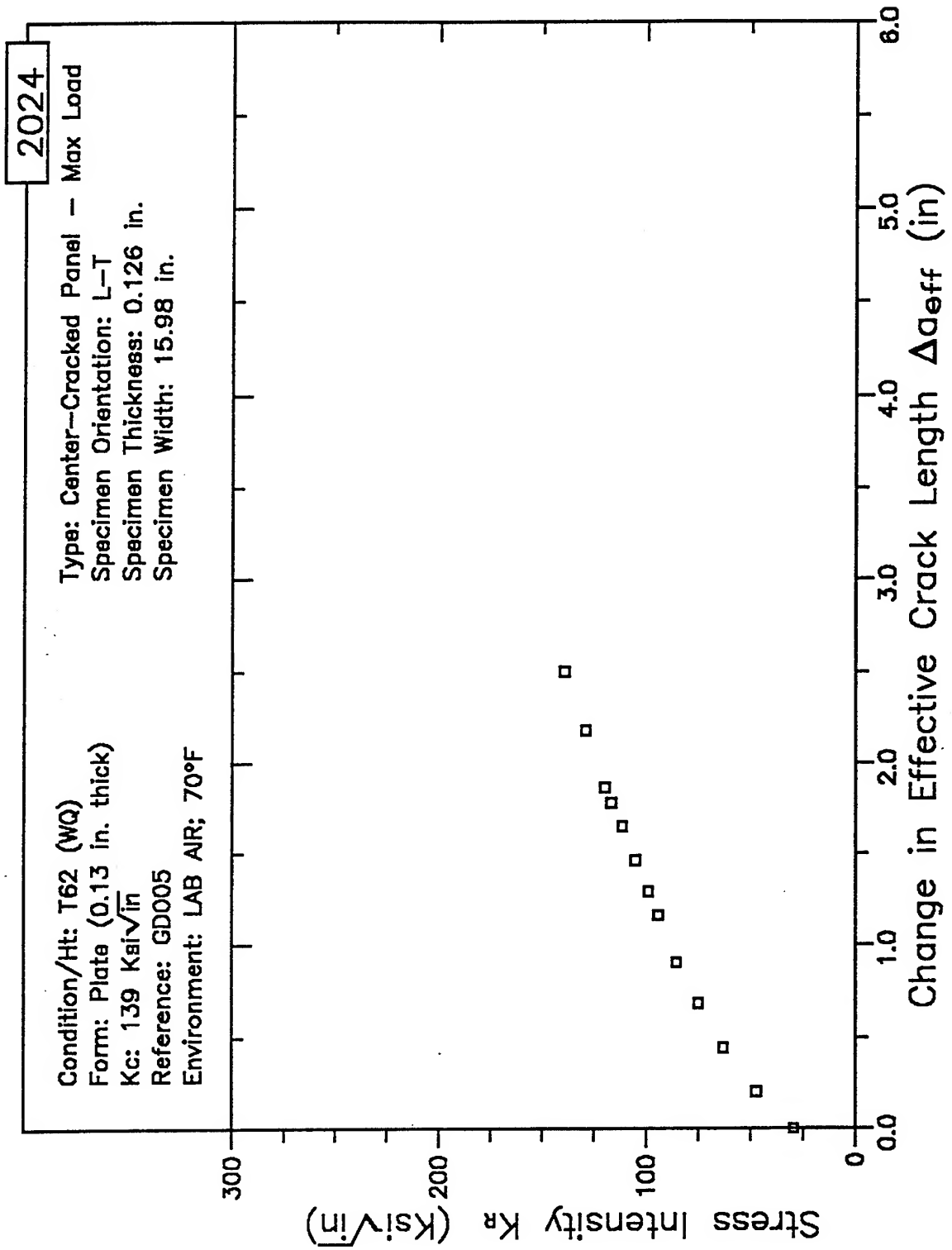


Figure 7.5.2.3.46

RESISTANCE CURVE

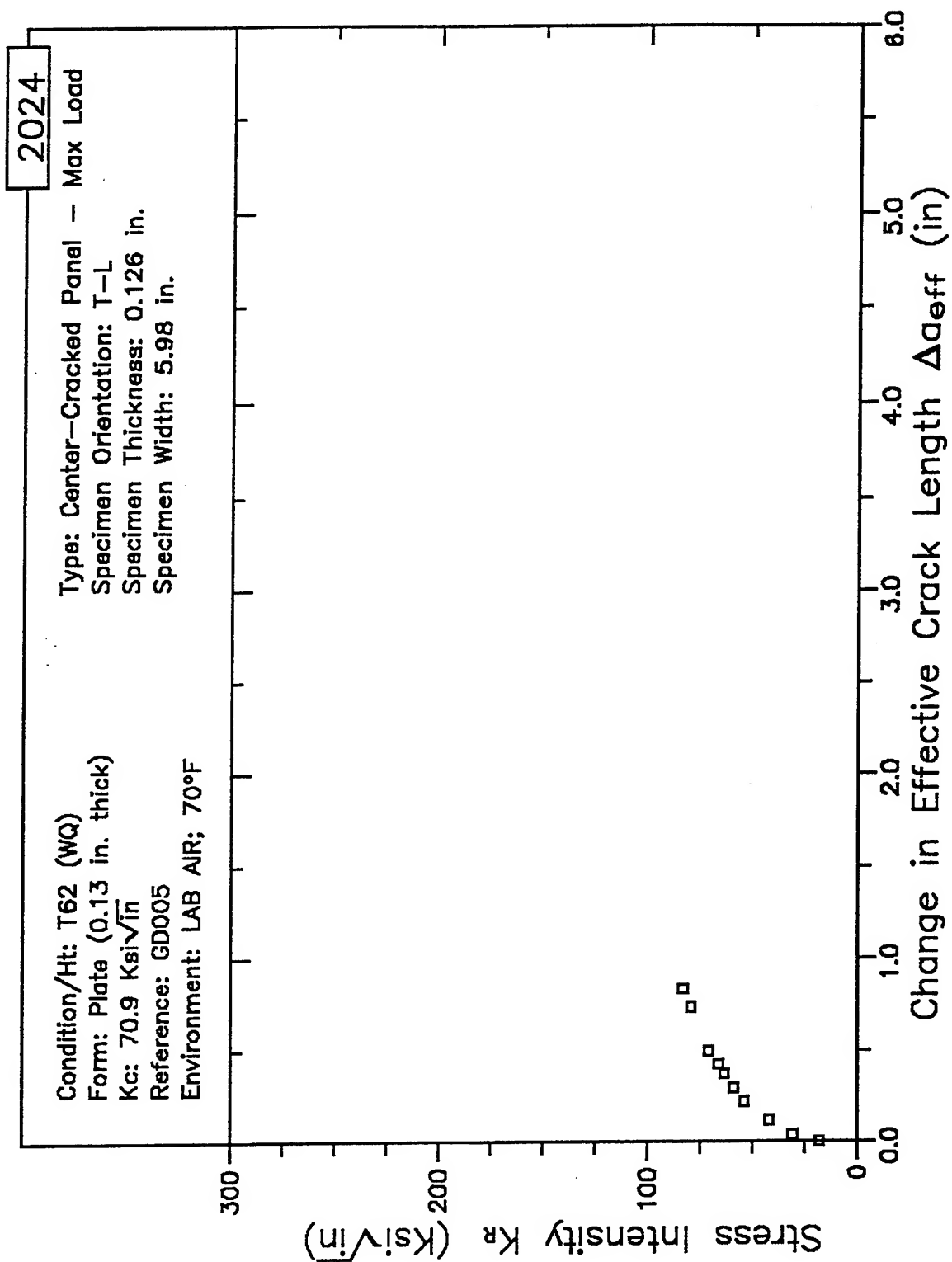


Figure 7.5.2.3.47

RESISTANCE CURVE

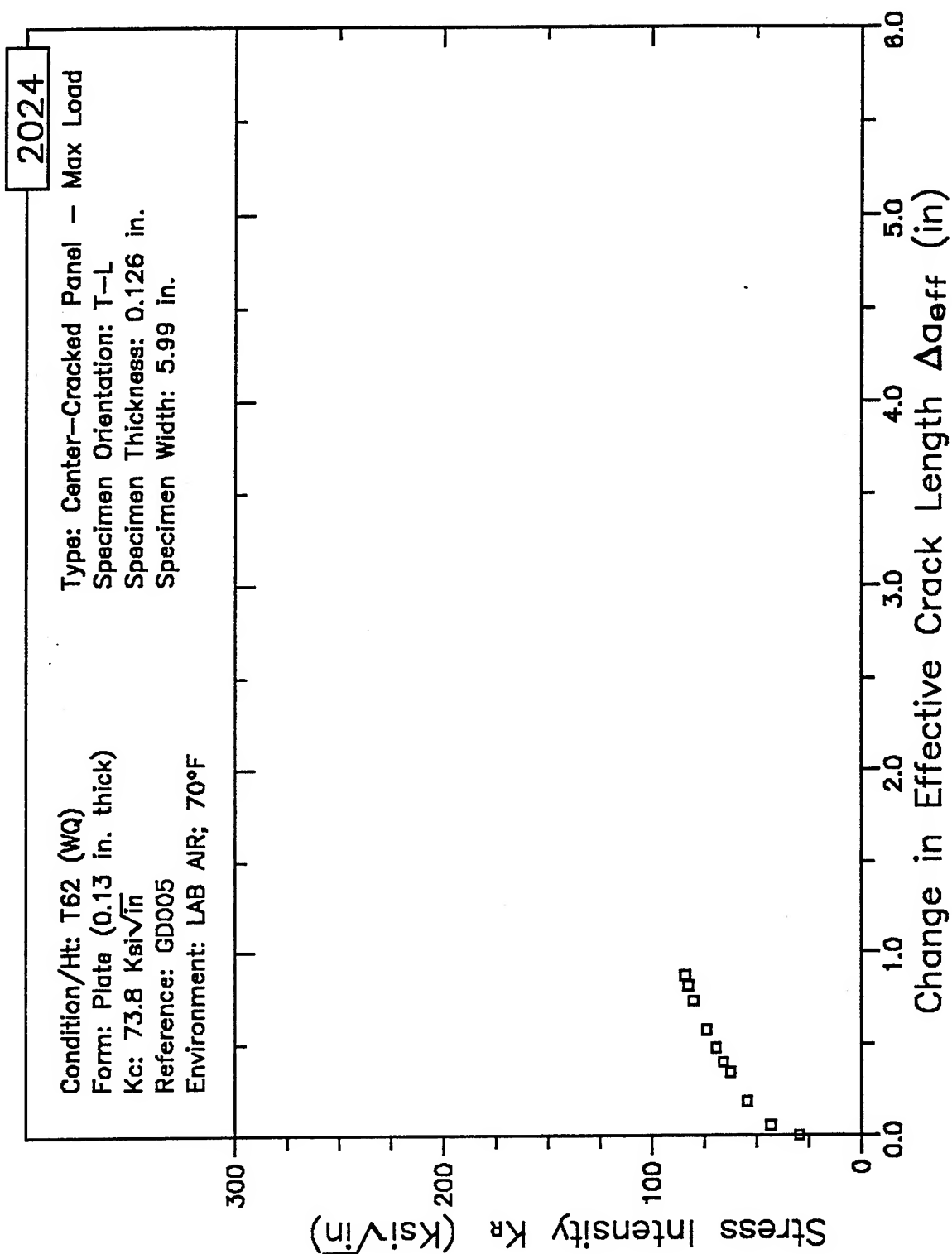


Figure 7.5.2.3.48

RESISTANCE CURVE

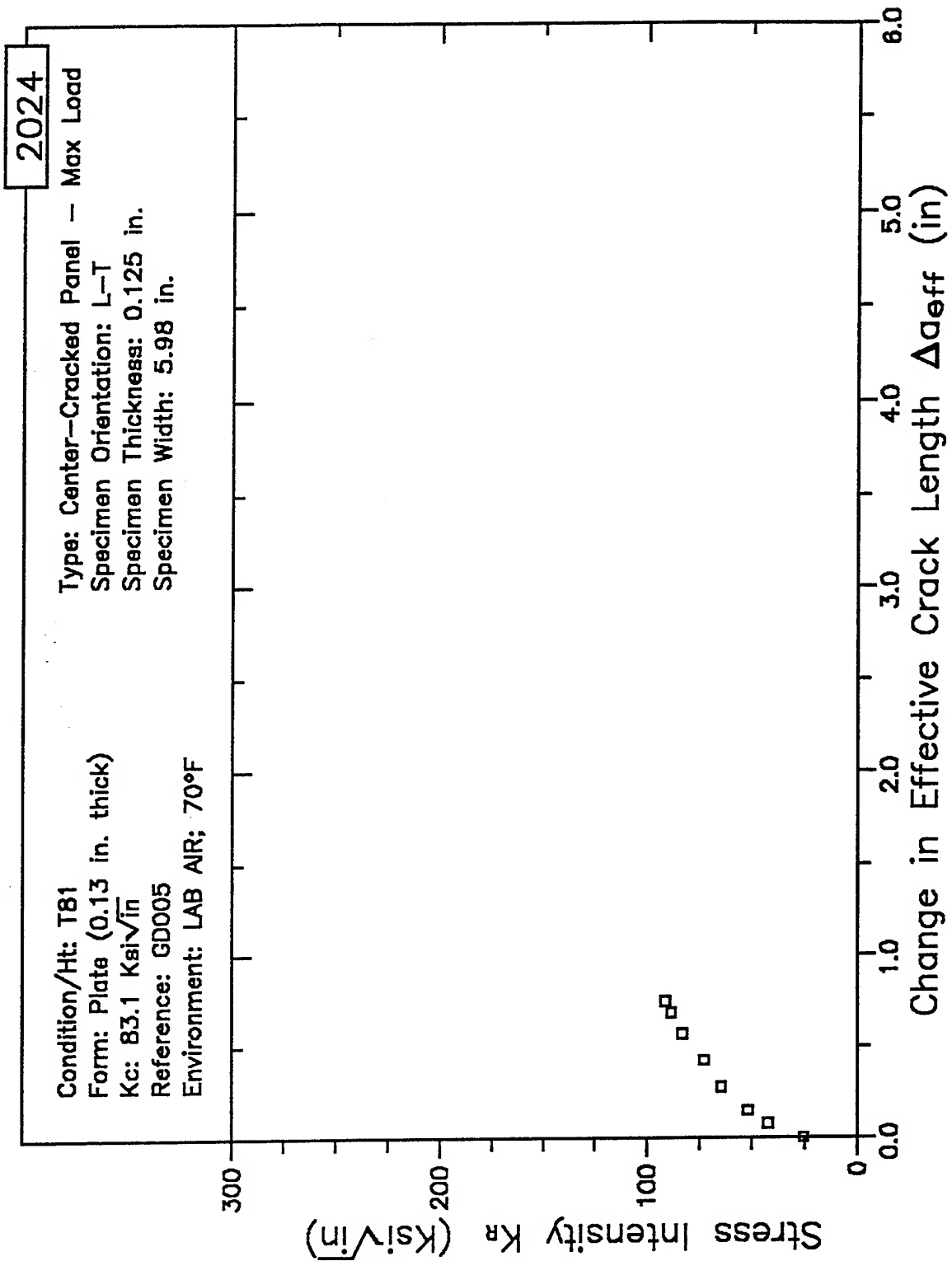


Figure 7.5.2.3.49

RESISTANCE CURVE

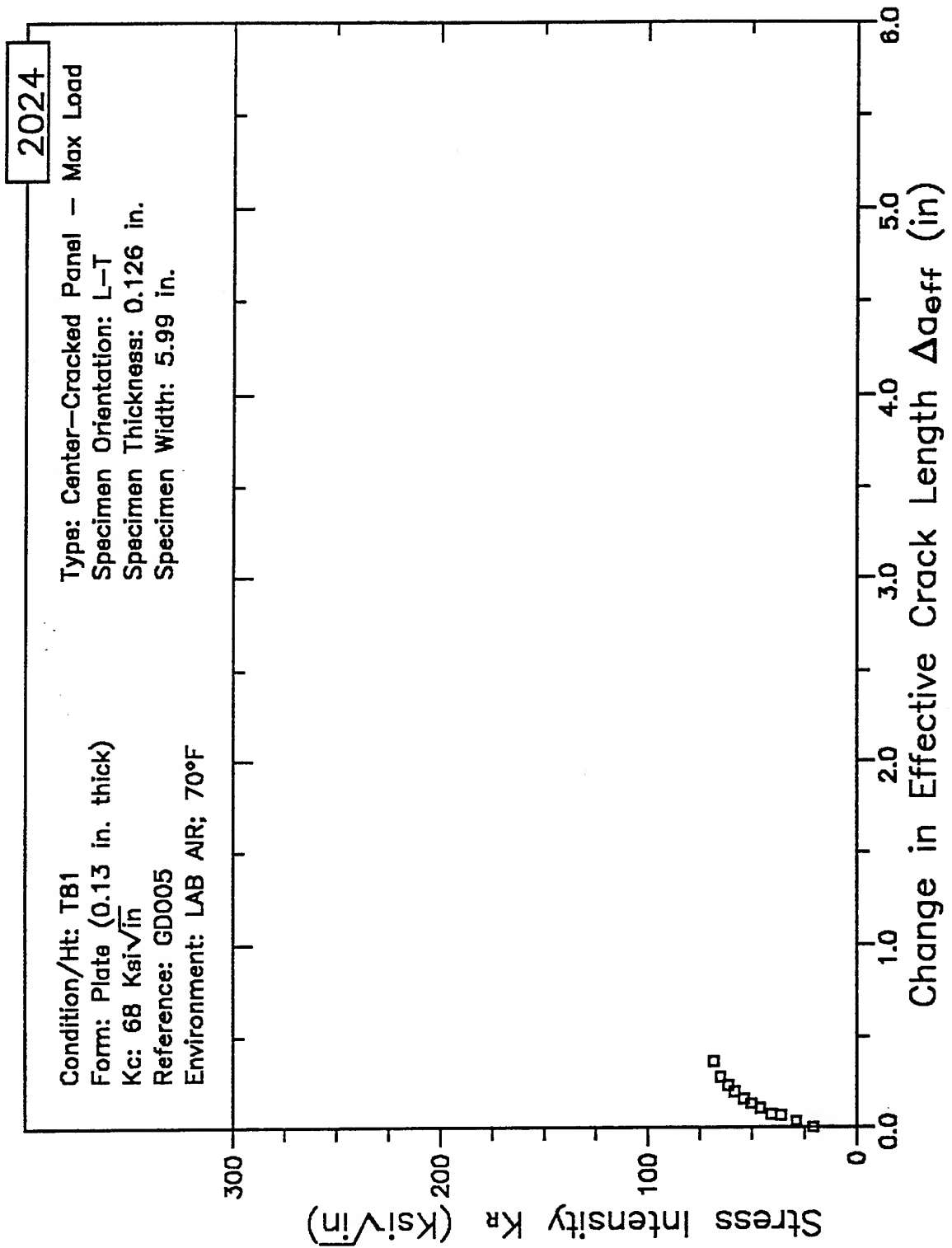


Figure 7.5.2.3.50

RESISTANCE CURVE

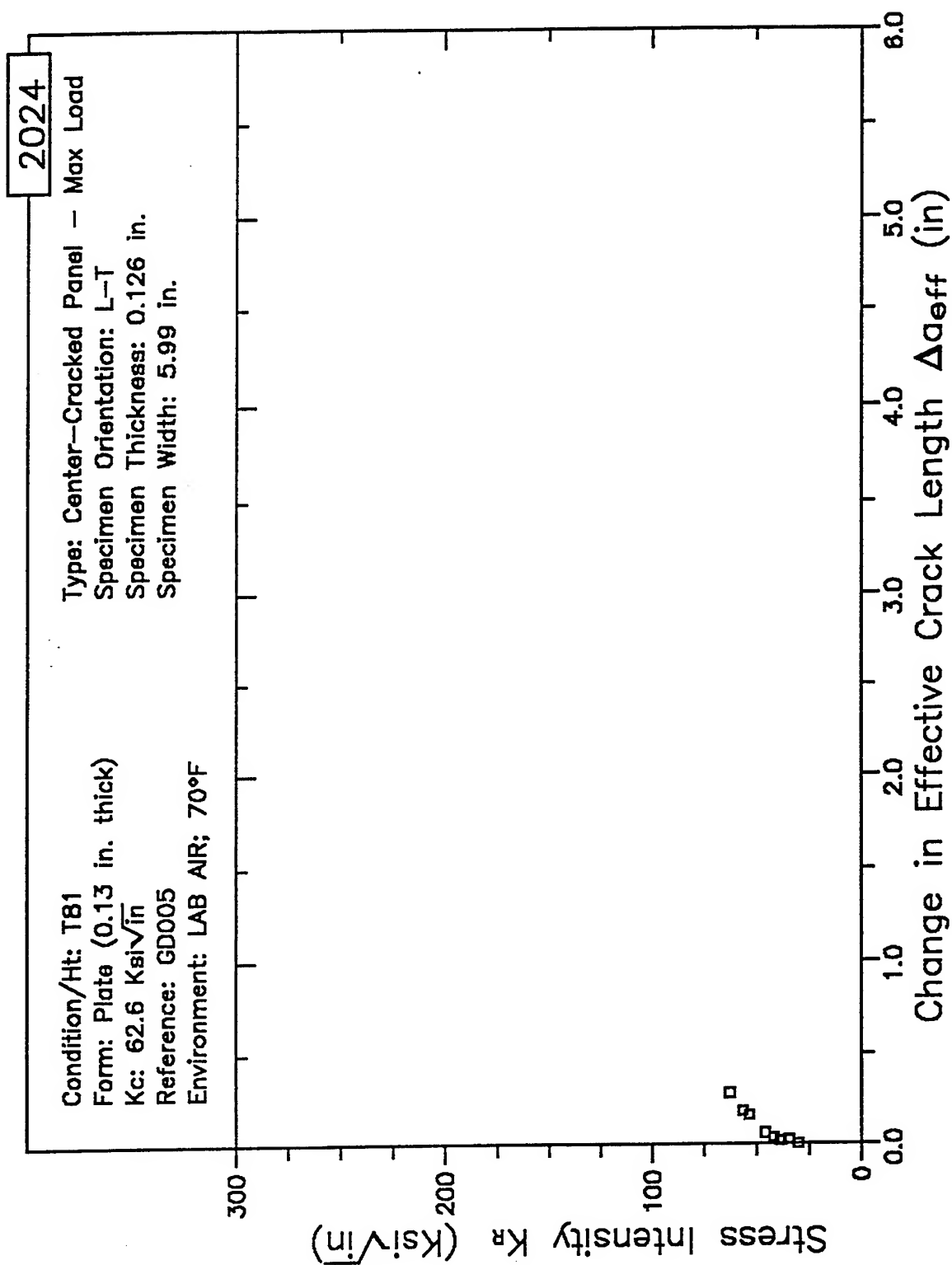


Figure 7.5.2.3.51

RESISTANCE CURVE

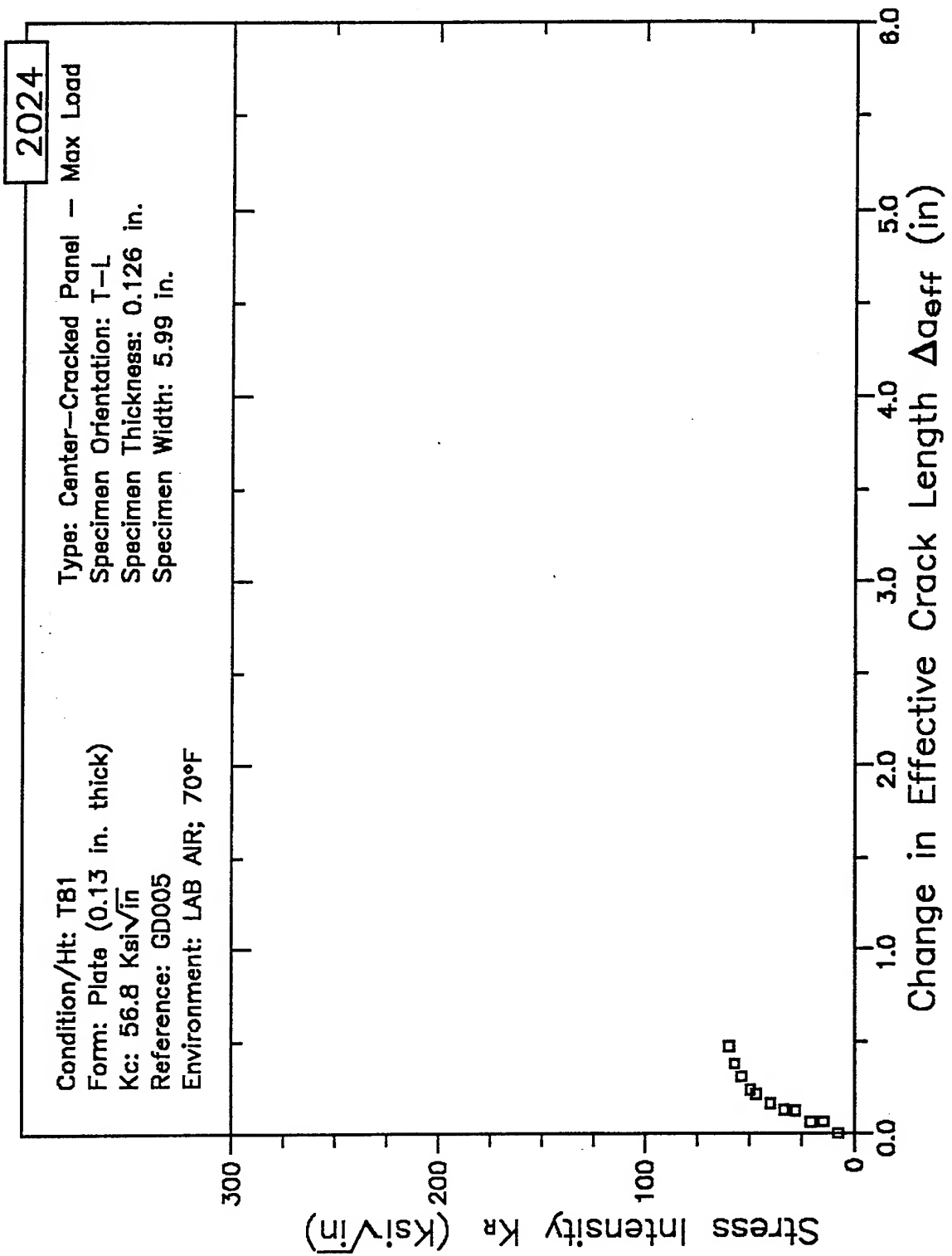


Figure 7.5.2.3.52

RESISTANCE CURVE

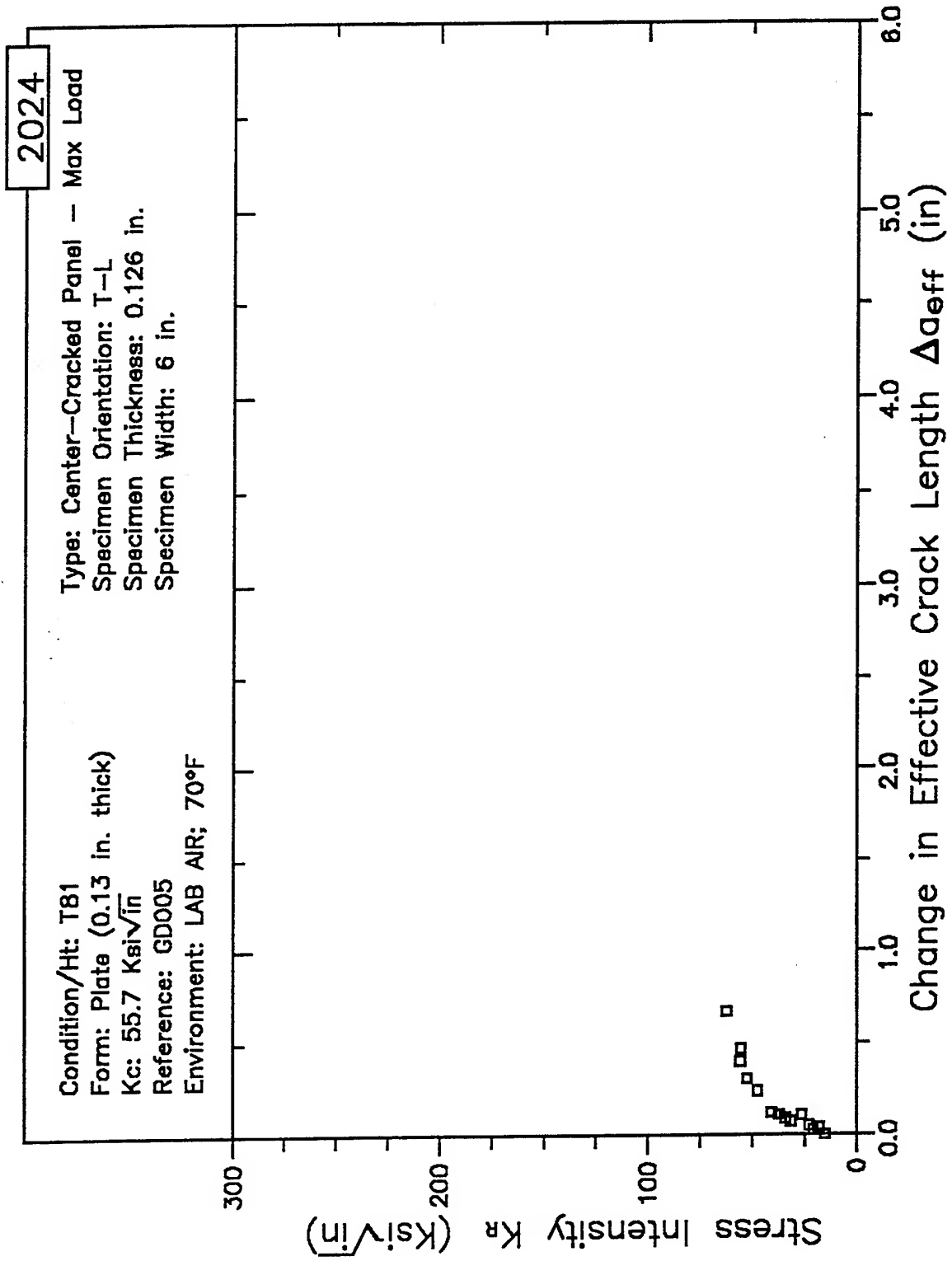


Figure 7.5.2.3.53

RESISTANCE CURVE

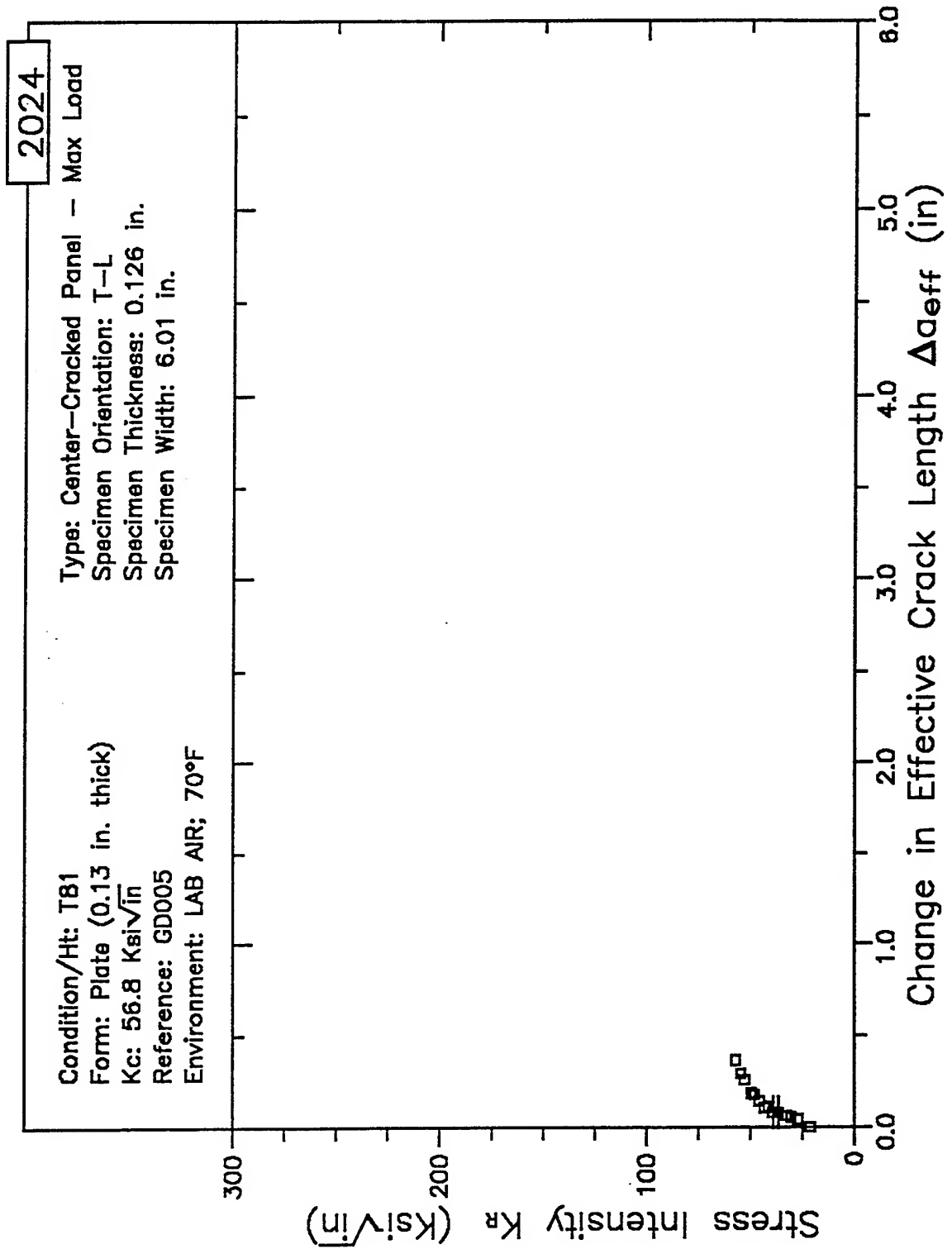


Figure 7.5.2.3.54

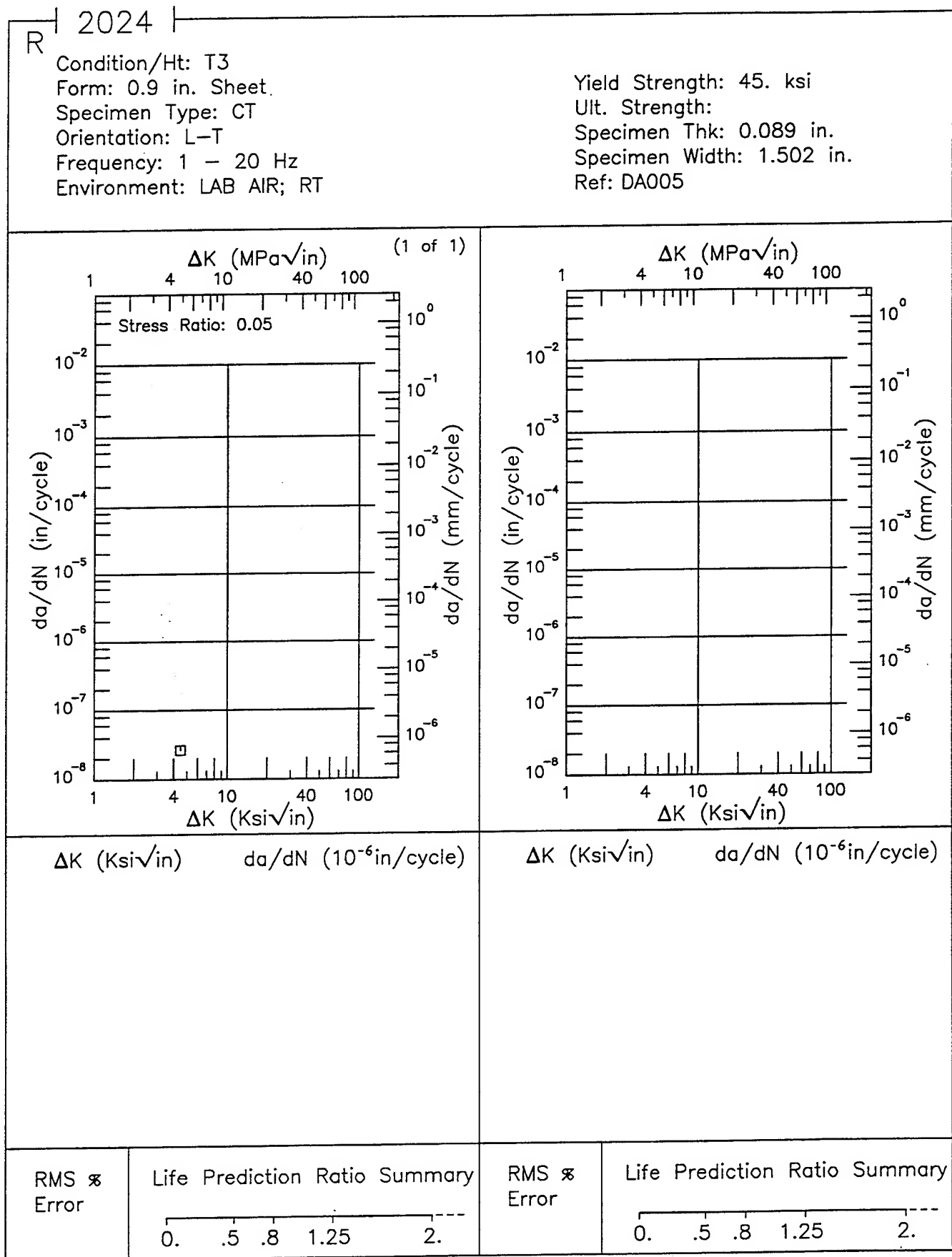


Figure 7.5.3.1.1

Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 Hz
 Environment: DIST WATER; RT

Yield Strength: 45. - 52.5 ksi
 Ult. Strength: 67.5 ksi
 Specimen Thk: 0.089 - 0.09 in.
 Specimen Width: 1.499 - 1.503 in.
 Ref: DA004;DA005

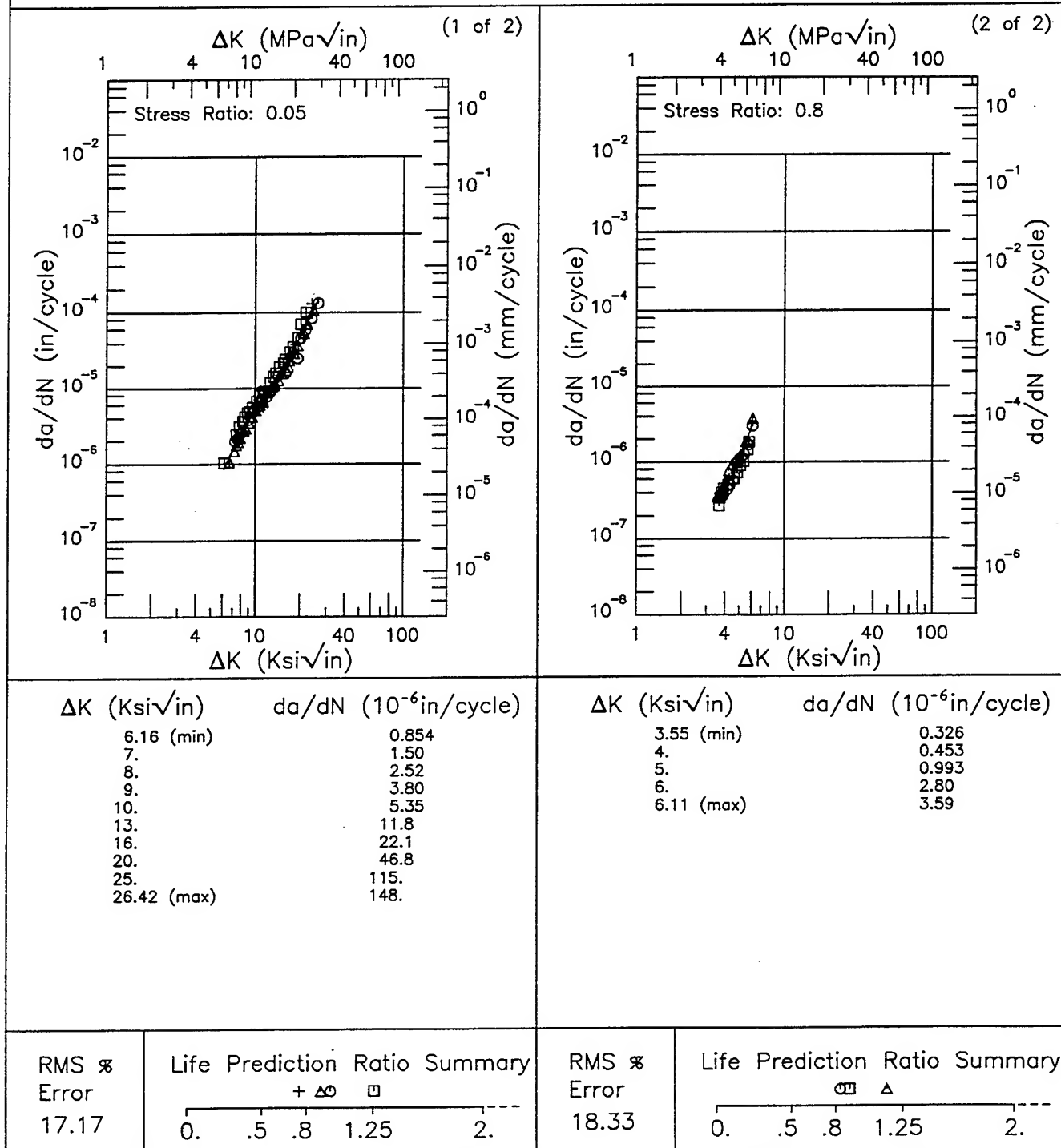


Figure 7.5.3.1.2

R

2024

Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CT
 Orientation: L-T
 Frequency: 5 Hz
 Environment: DIST WATER; RT

Yield Strength: 45. - 51.2 ksi
 Ult. Strength:
 Specimen Thk: 0.089 in.
 Specimen Width: 1.499 - 1.5 in.
 Ref: DA005

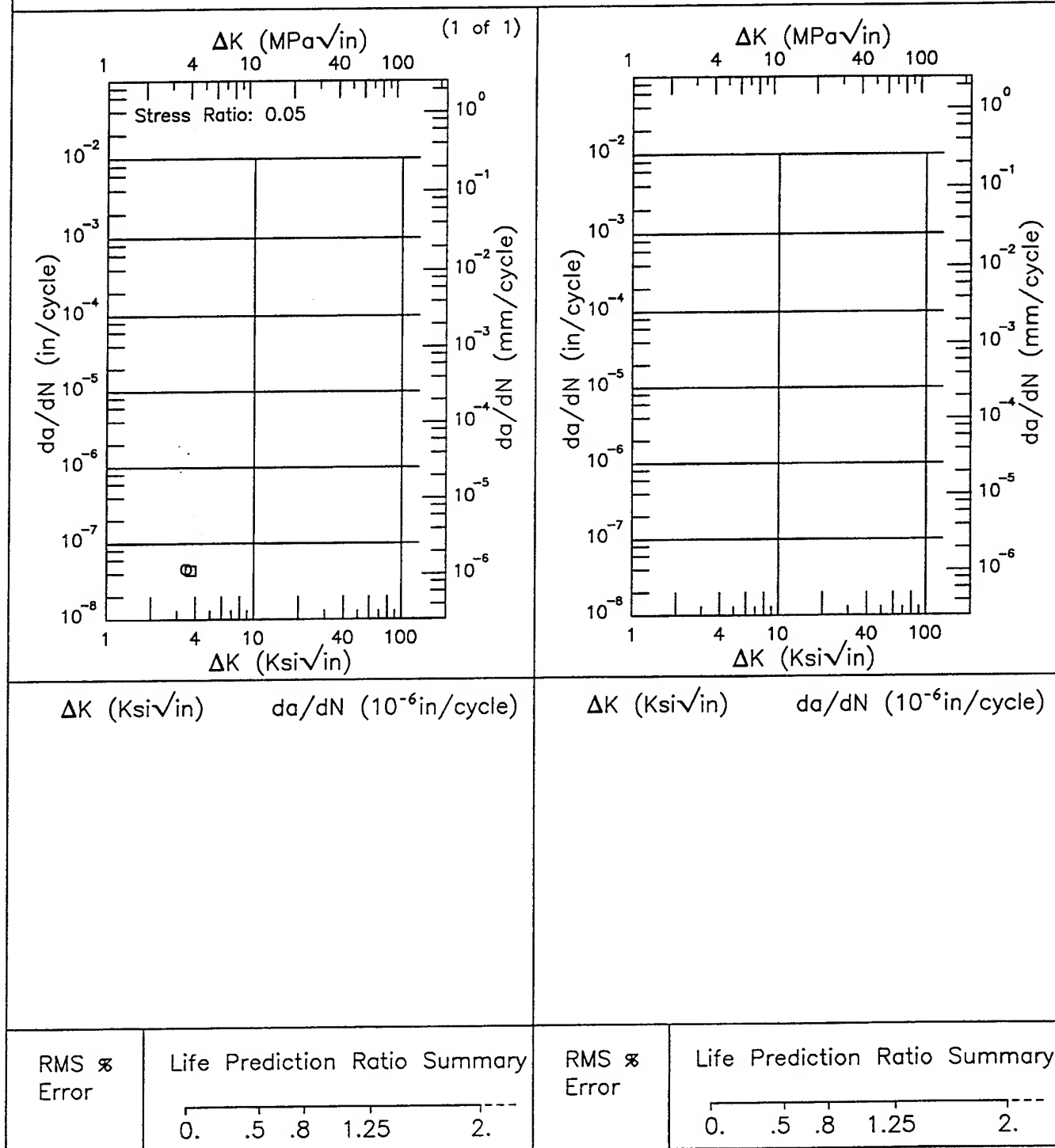
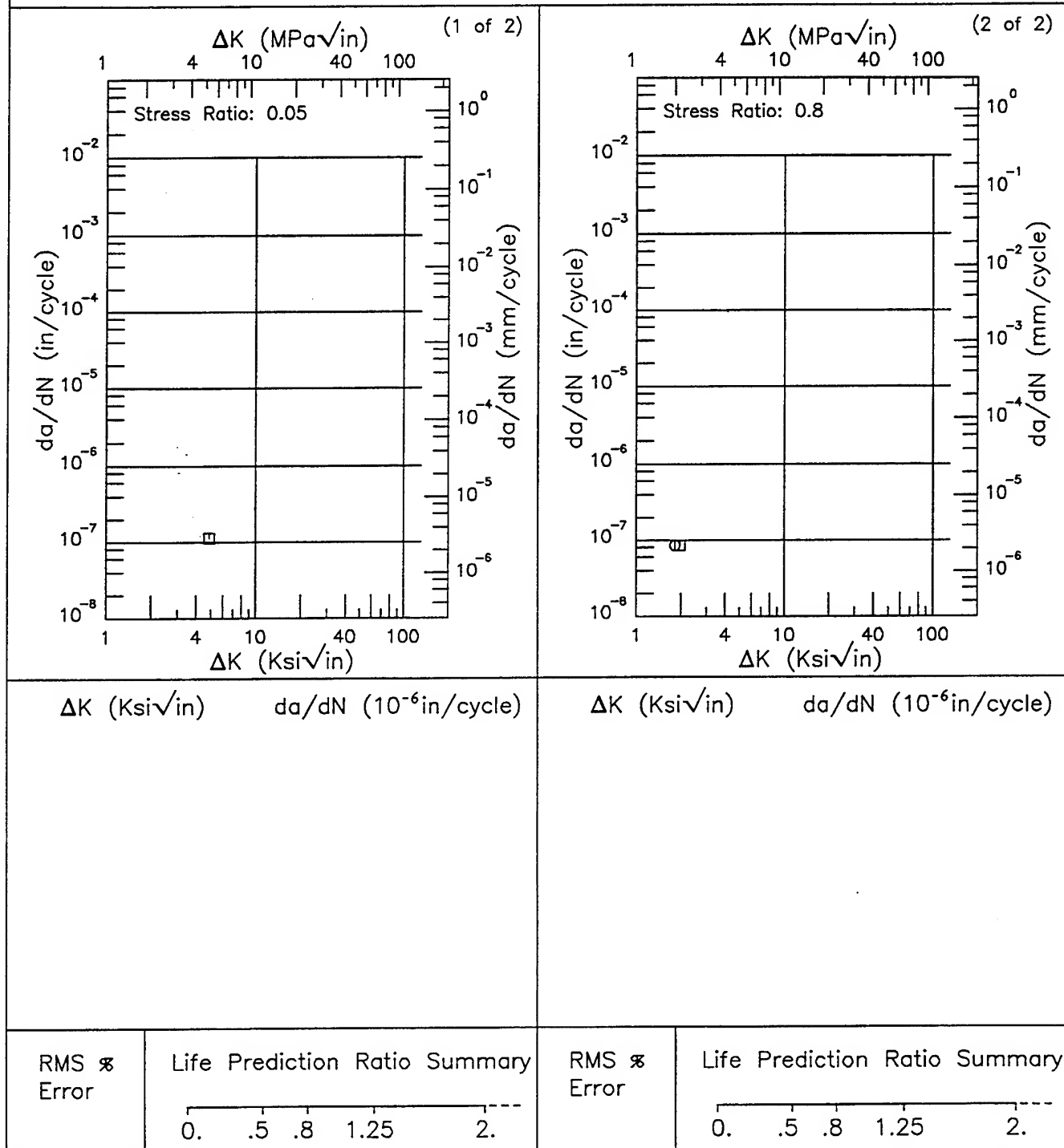


Figure 7.5.3.1.3

Yield Strength: 45. - 51.2 ksi
Ult. Strength:
Specimen Thk: 0.089 in.
Specimen Width: 1.5 - 1.502 in.
Ref: DA005



F | 2024 |
 Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.8
 Environment: LAB AIR; RT

Yield Strength: 45. – 51.2 ksi
 Ult. Strength:
 Specimen Thk: 0.089 in.
 Specimen Width: 1.5 – 1.502 in.
 Ref: DA005

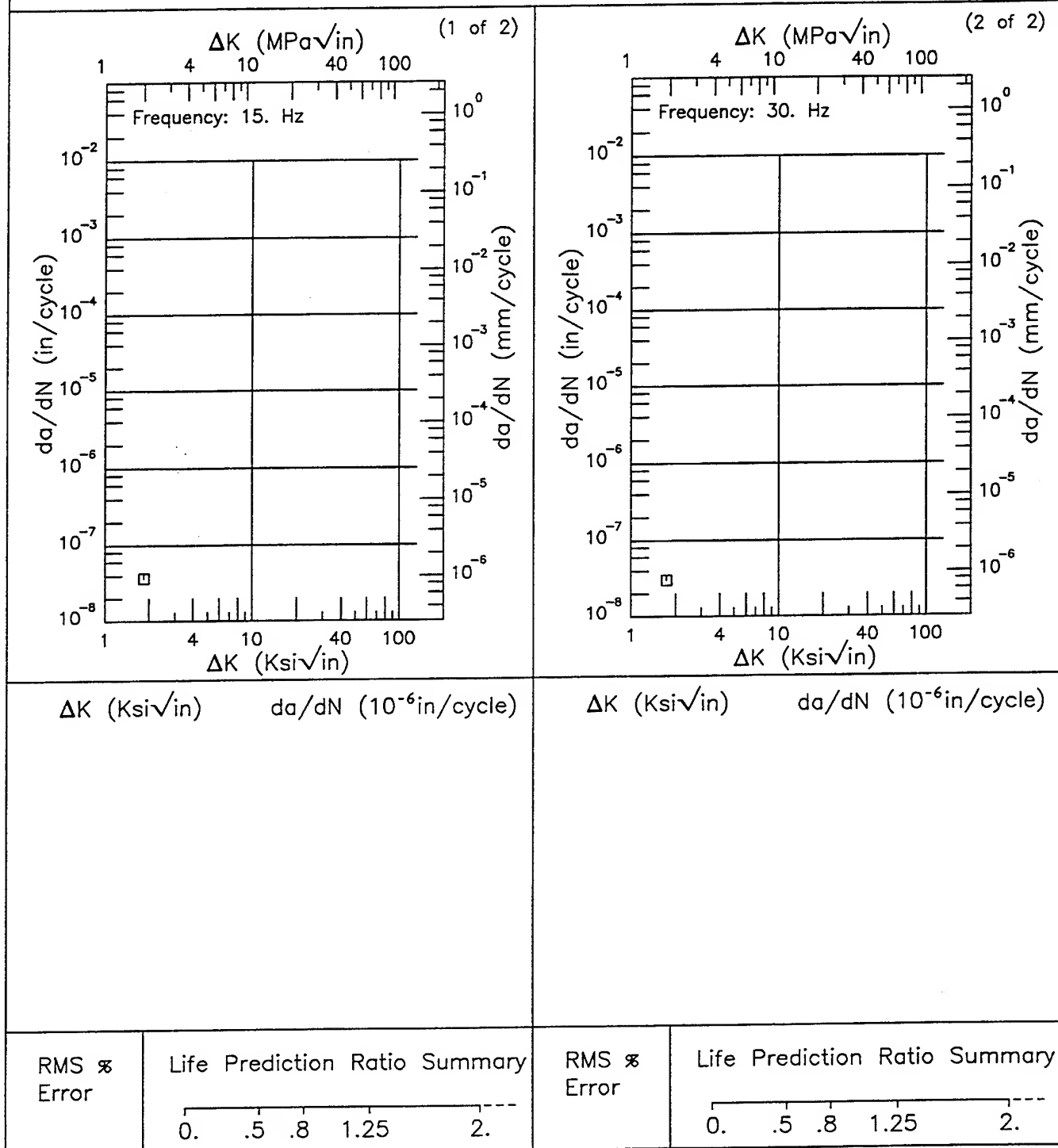


Figure 7.5.3.1.5

Condition/Ht: T3
Form: 0.9 in. Sheet
Specimen Type: CT
Orientation: T-L
Frequency: 1 Hz
Environment: DIST WATER; RT

Yield Strength: 45.1 ksi
Ult. Strength: 65.8 ksi
Specimen Thk: 0.091 - 0.092 in.
Specimen Width: 1.501 - 1.502 in.
Ref: DA004

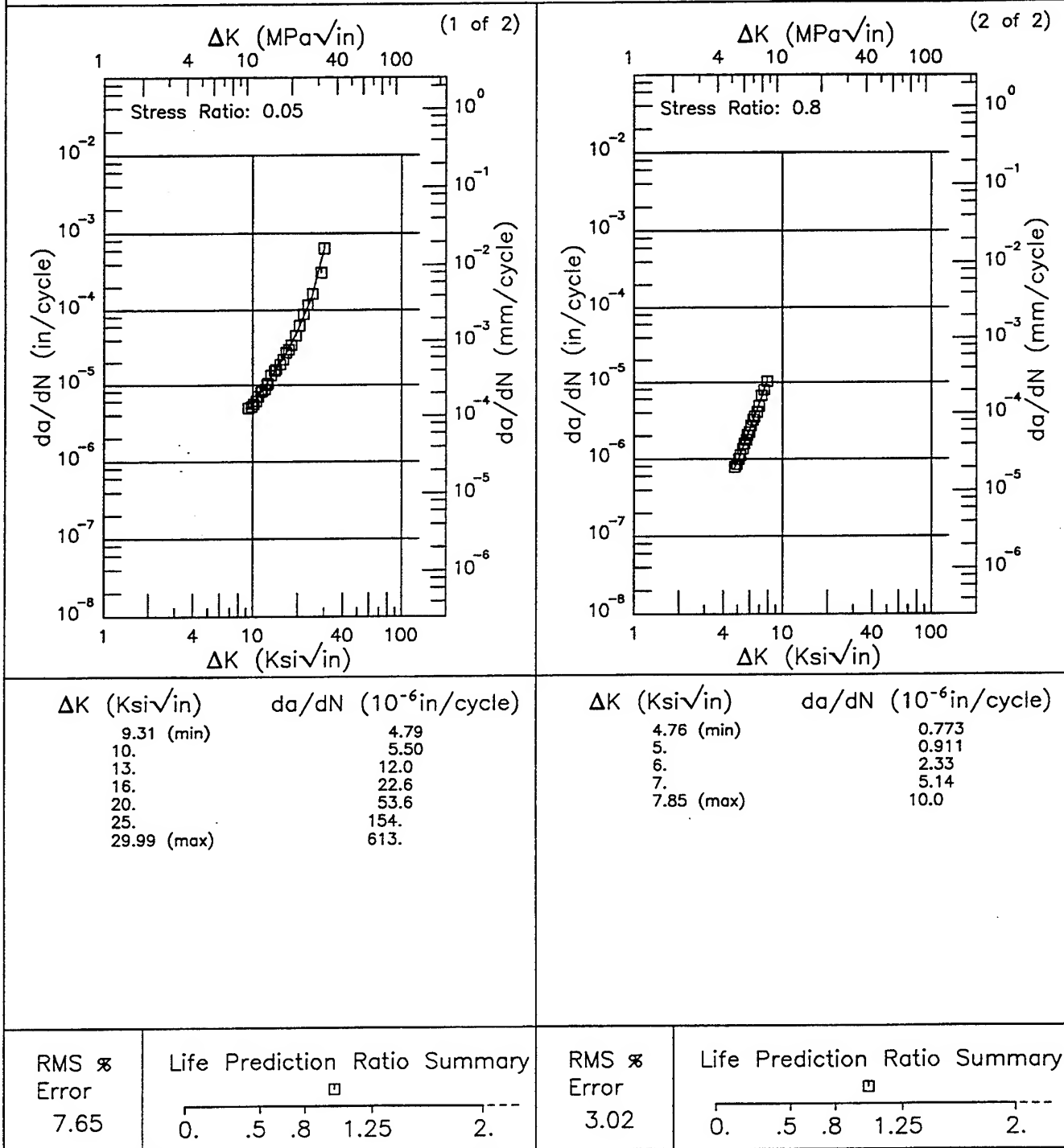


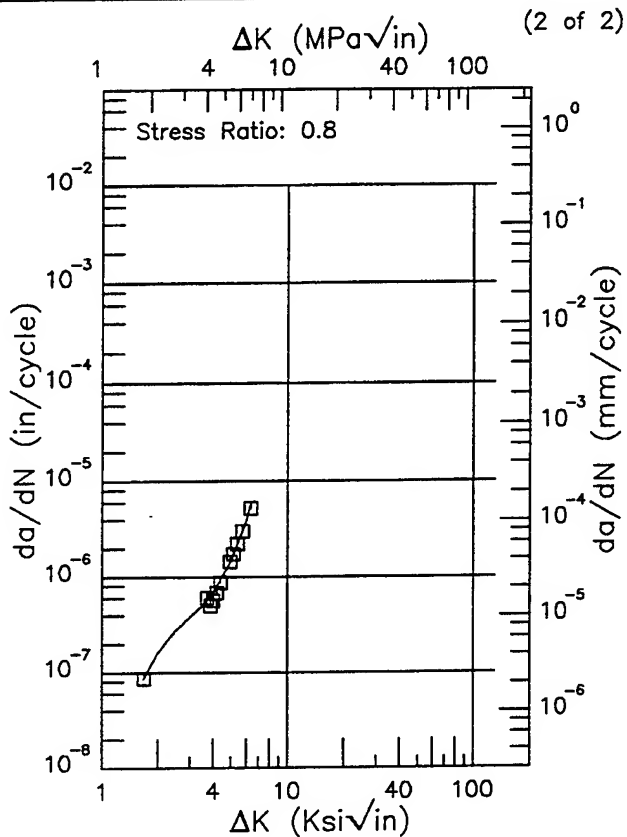
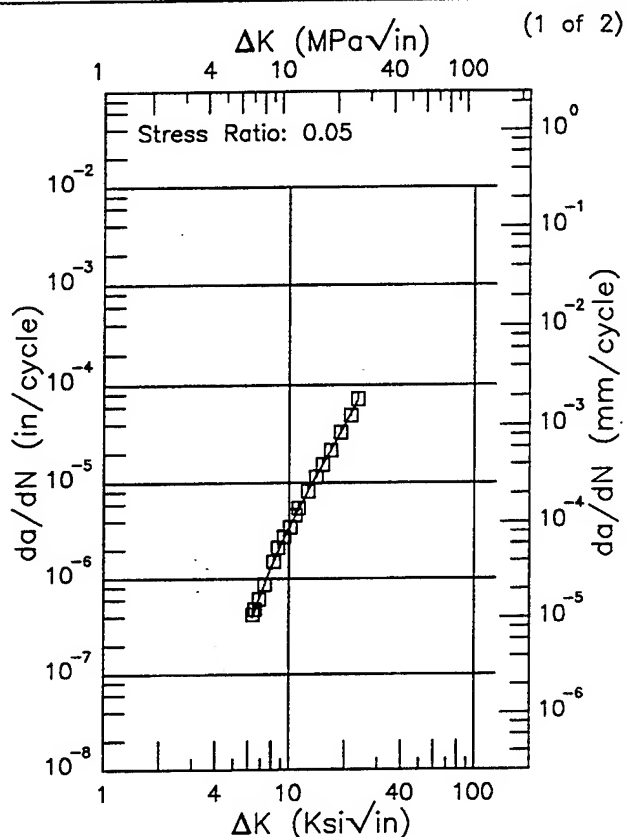
Figure 7.5.3.1.6

R

2024

Condition/Ht: T3
Form: 0.9 in. Sheet
Specimen Type: CT
Orientation: T-L
Frequency: 1 - 5 Hz
Environment: DIST WATER; RT

Yield Strength: 45.1 ksi
Ult. Strength: 65.8 ksi
Specimen Thk: 0.091 in.
Specimen Width: 1.5 - 1.503 in.
Ref: DA004



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.34 (min)	0.390
7.	0.677
8.	1.32
9.	2.25
10.	3.48
13.	9.18
16.	18.4
20.	39.1
23.38 (max)	69.5

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
1.68 (min)	0.0863
2.	0.162
2.5	0.275
3.	0.380
3.5	0.504
4.	0.684
5.	1.47
6.	3.92
6.31 (max)	5.54

RMS \times
Error
4.29

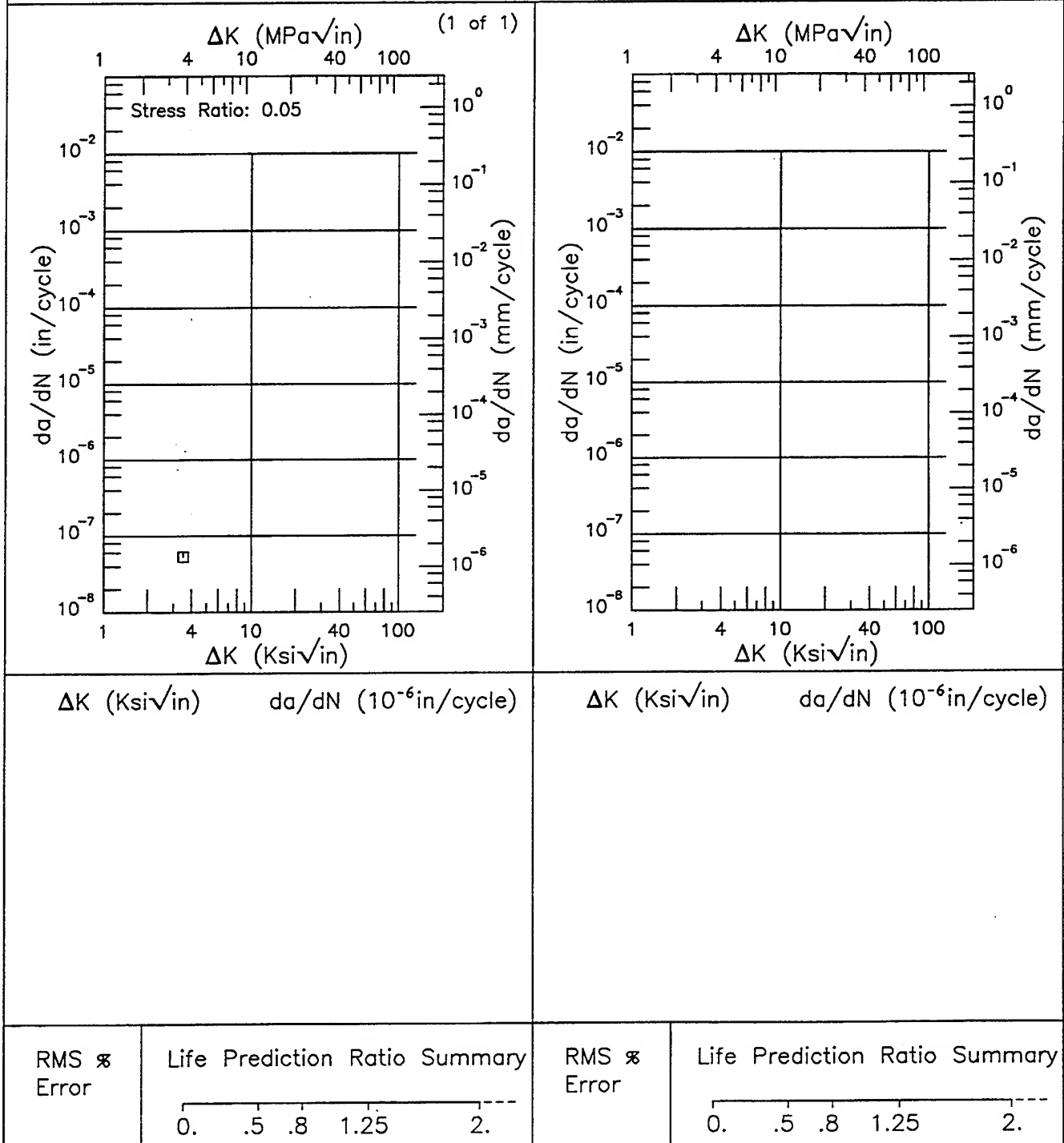
Life Prediction Ratio Summary
0. 0.5 0.8 1.25 2. \square

RMS \times
Error
9.75

Life Prediction Ratio Summary
0. 0.5 0.8 1.25 2. \square

Figure 7.5.3.1.7

Yield Strength: 45.1 ksi
Ult. Strength: 65.8 ksi
Specimen Thk: 0.091 in.
Specimen Width: 1.503 in.
Ref: DA004



7-203

R | 2024 |

Condition/Ht: T3
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 13.3 Hz
 Environment: LAB AIR; RT

Yield Strength: 50 ksi
 Ult. Strength: 68.2 ksi
 Specimen Thk: 0.125 - 0.126 in.
 Specimen Width: 4 in.
 Ref: 86213

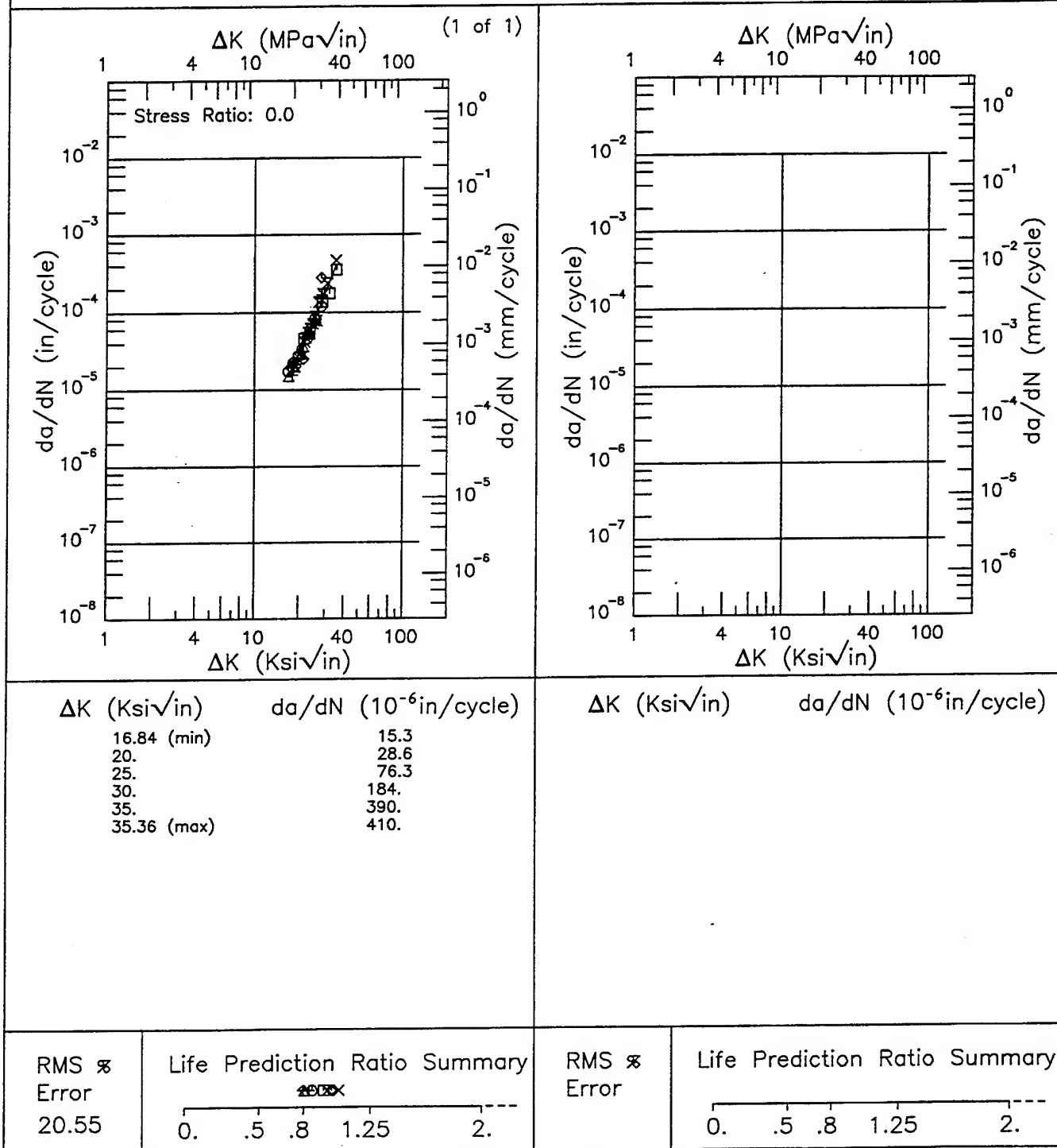


Figure 7.5.3.1.9

Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: 0.05
 Environment: LAB AIR; RT

Yield Strength: 15–52.5 ksi
 Ult. Strength: 67.5 ksi
 Specimen Thk: 0.089 in.
 Specimen Width: 12.009–12.01 in.
 Ref: DA004;DA005

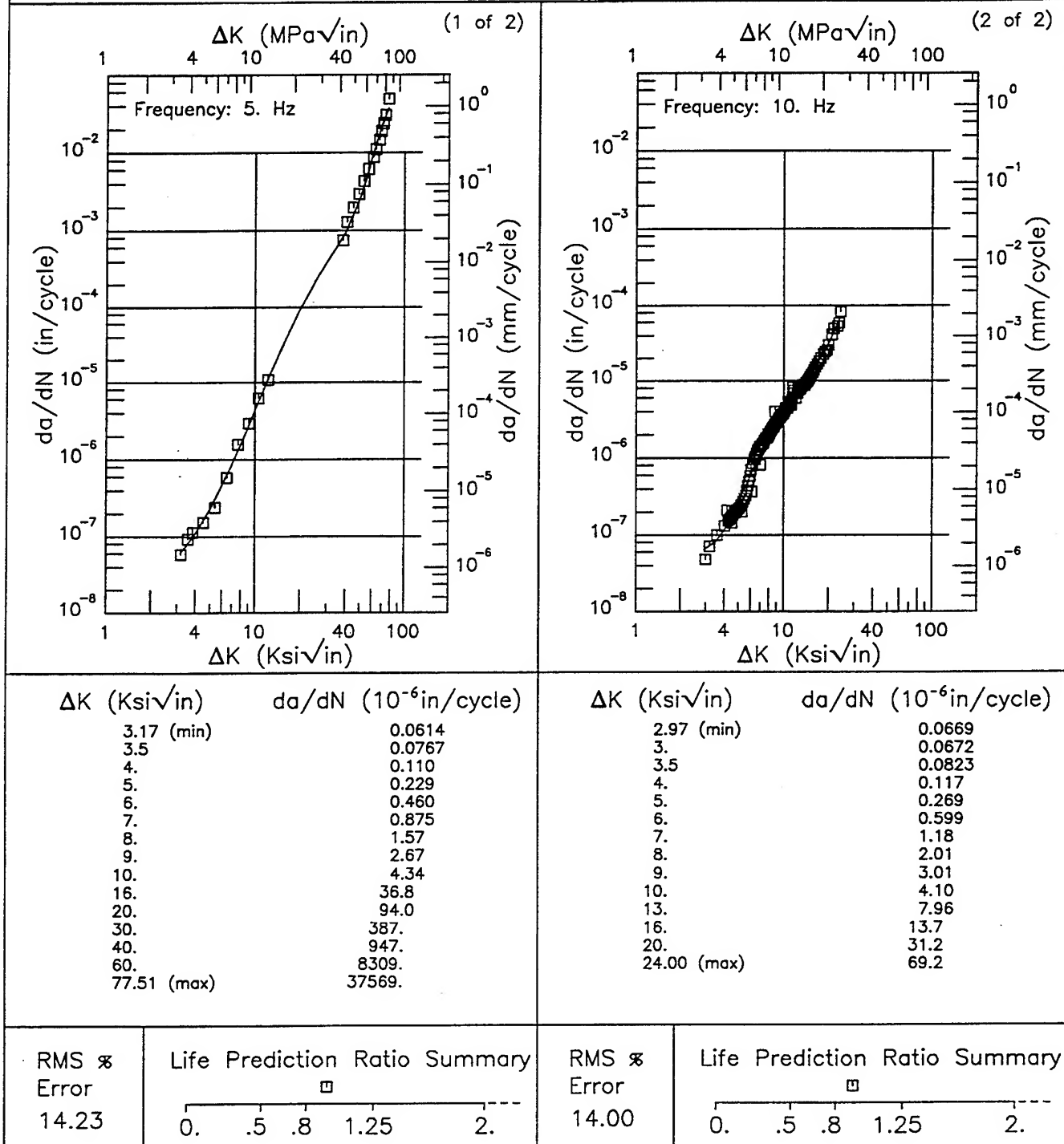


Figure 7.5.3.1.10

R

2024

Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 5 Hz
 Environment: LAB AIR; RT

Yield Strength: 15 ksi
 Ult. Strength:
 Specimen Thk: 0.089 in.
 Specimen Width: 11.012–11.016 in.
 Ref: DA005

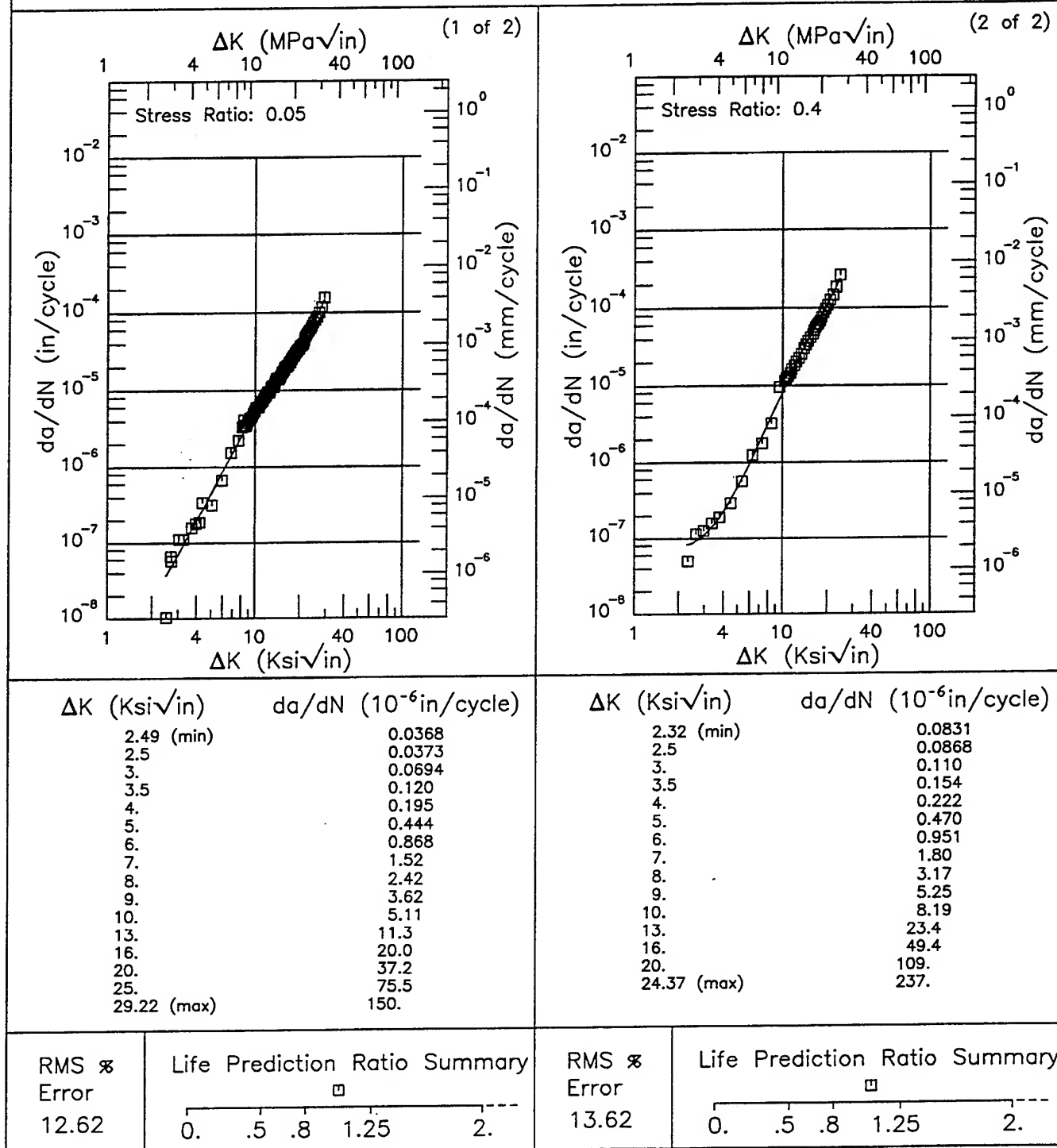


Figure 7.5.3.1.11

Condition/Ht: T3
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 2 Hz
 Environment: H.H.A.; RT

Yield Strength: 49 ksi
 Ult. Strength: 66 ksi
 Specimen Thk: 0.128 in.
 Specimen Width: 12 in.
 Ref: 86212

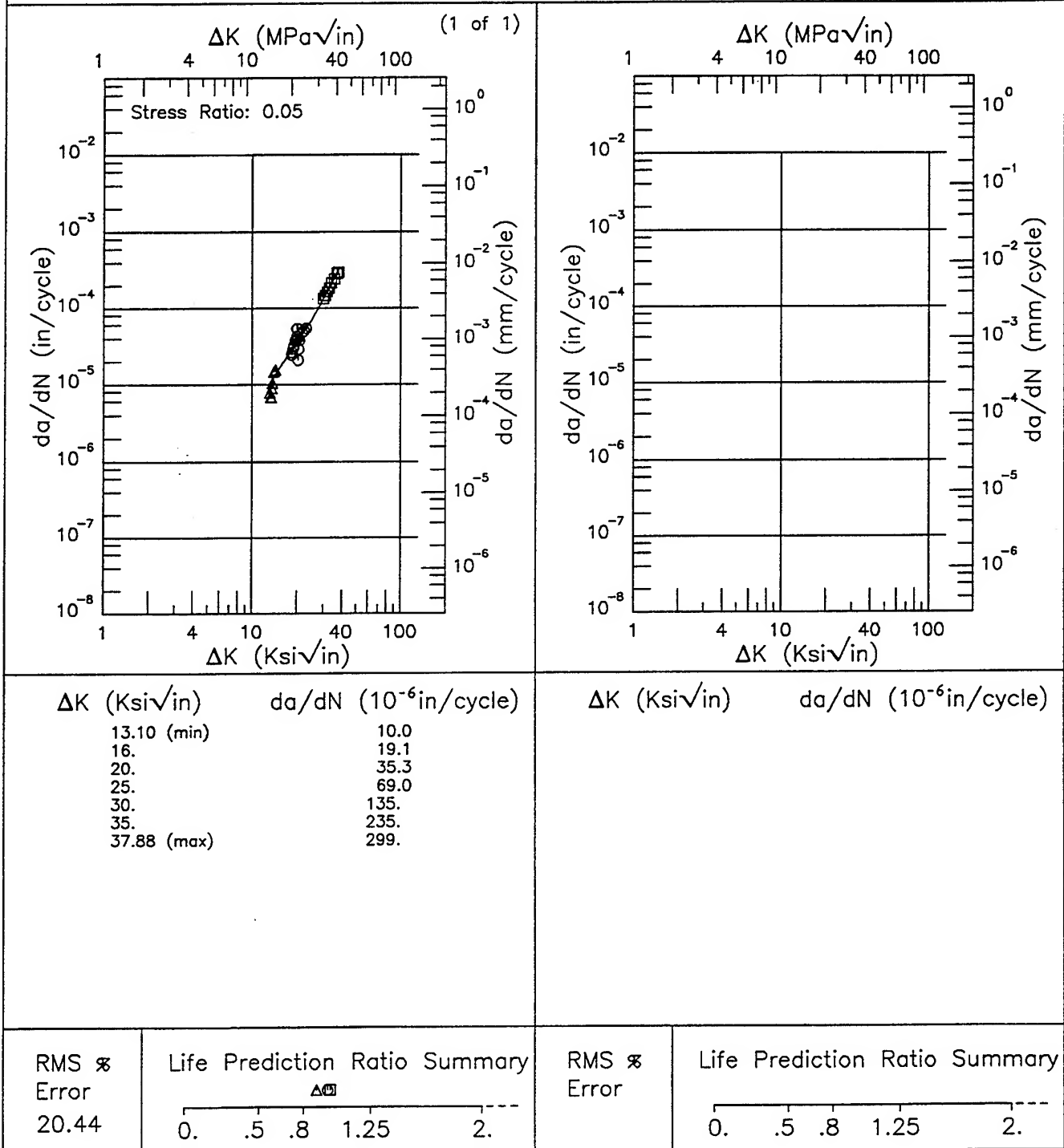


Figure 7.5.3.1.12

R 2024

Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 Hz
 Environment: DIST WATER; RT

Yield Strength: 52.5 ksi
 Ult. Strength: 67.5 ksi
 Specimen Thk: 0.09 in.
 Specimen Width: 3.861 - 3.864 in.
 Ref: DA004

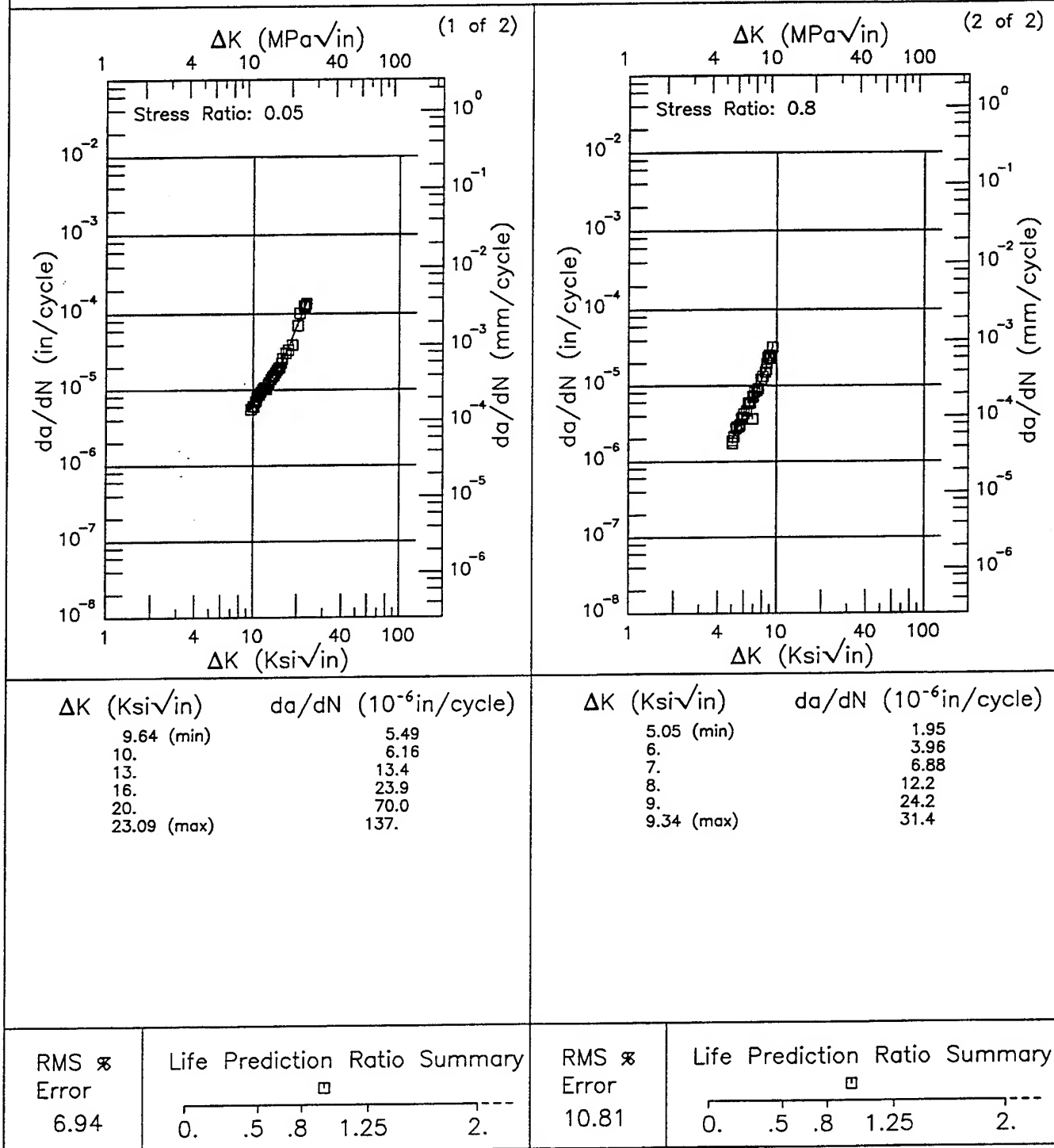


Figure 7.5.3.1.13

Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 Hz
 Environment: DIST WATER; RT

Yield Strength: 45. - 51.2 ksi
 Ult. Strength:
 Specimen Thk: 0.089 in.
 Specimen Width: 3.95 - 3.952 in.
 Ref: DA005

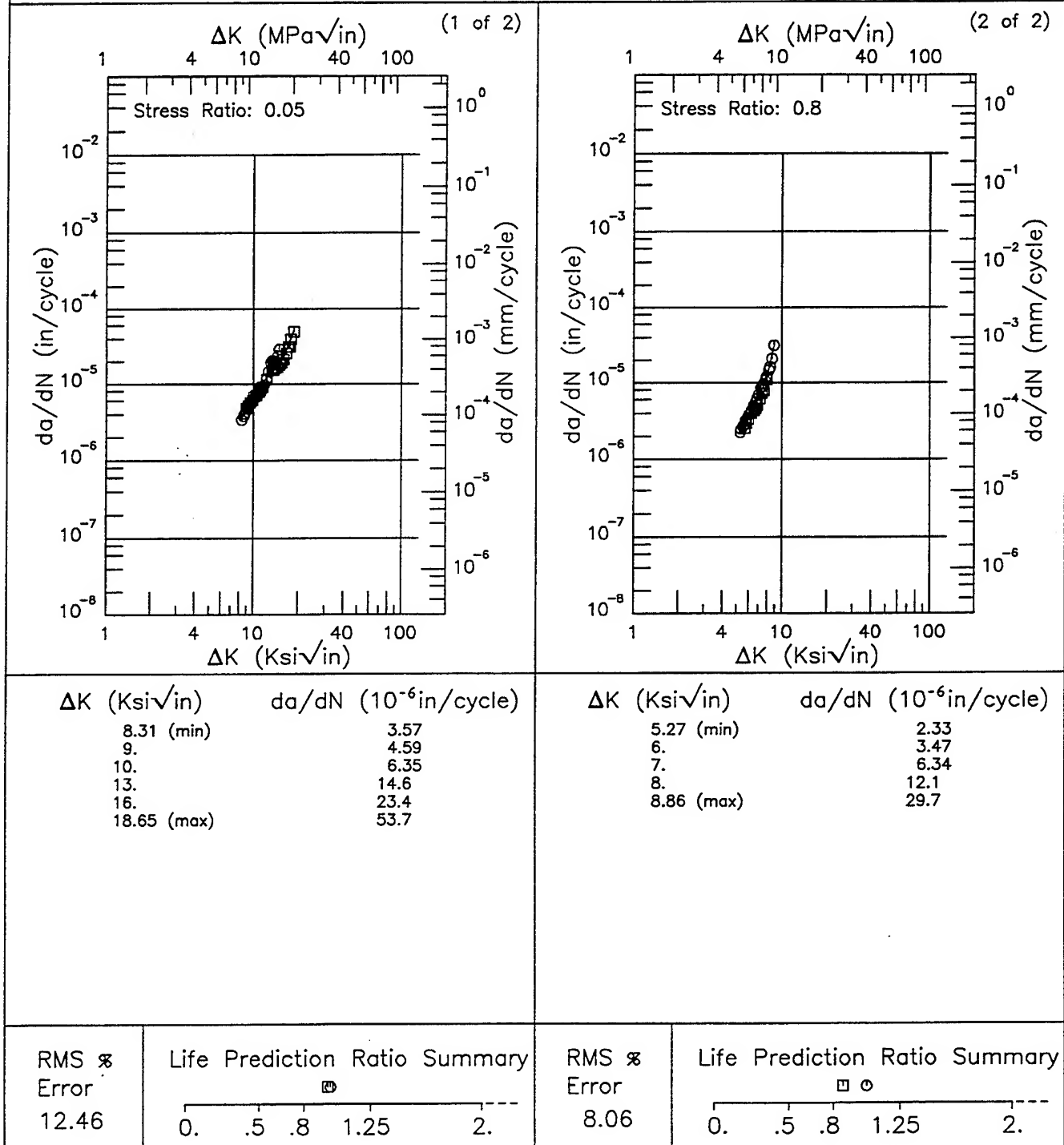


Figure 7.5.3.1.14

R

2024

Condition/Ht: T3

Form: 0.09 in. Sheet

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 10 Hz

Environment: LAB AIR; RT

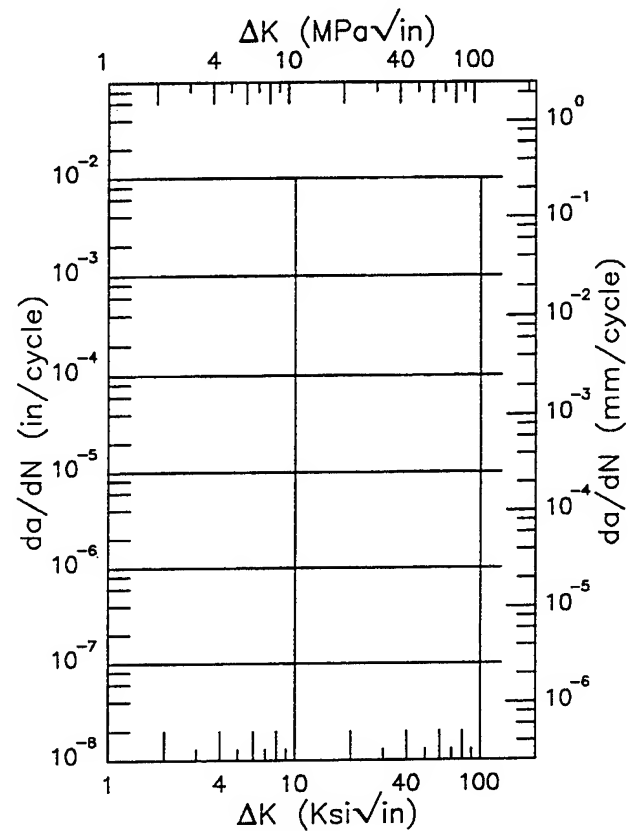
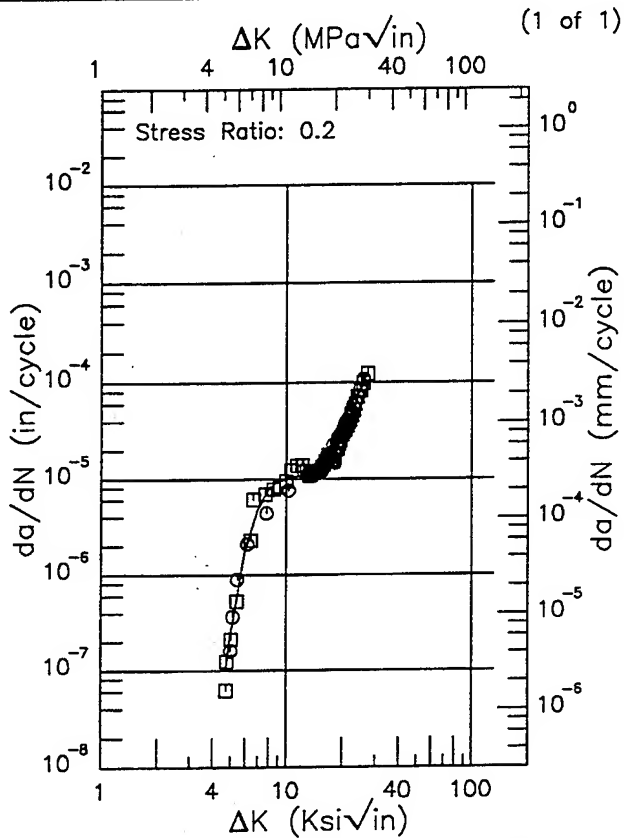
Yield Strength:

Ult. Strength:

Specimen Thk: 0.09 in.

Specimen Width: 4.01 in.

Ref: FR001



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.73 (min)	0.107
5.	0.244
6.	1.81
7.	4.87
8.	7.77
9.	9.49
10.	10.2
13.	11.2
16.	14.9
20.	29.5
25.	85.0
27.13 (max)	125.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
--------------------------------------	-------------------------------

RMS %
Error
17.02

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

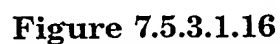
RMS %
Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

Figure 7.5.3.1.15

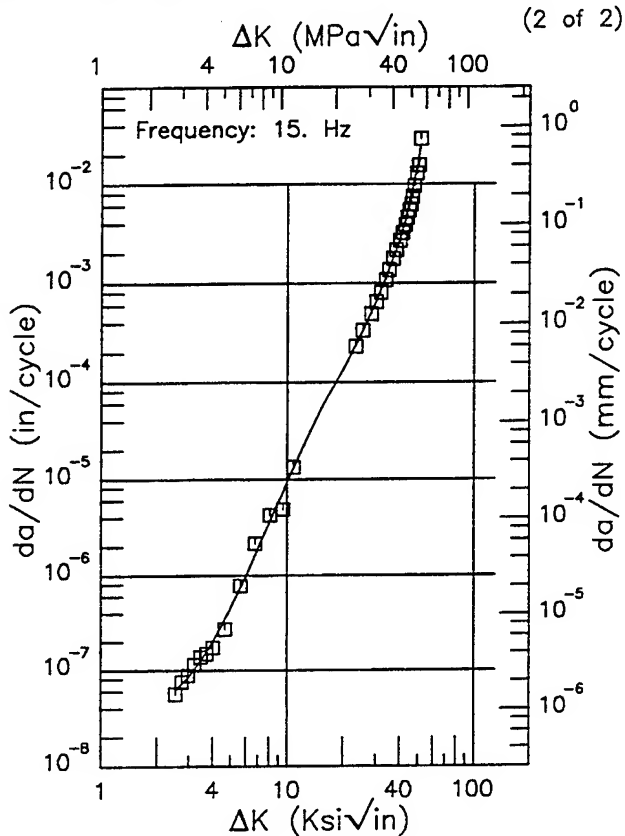
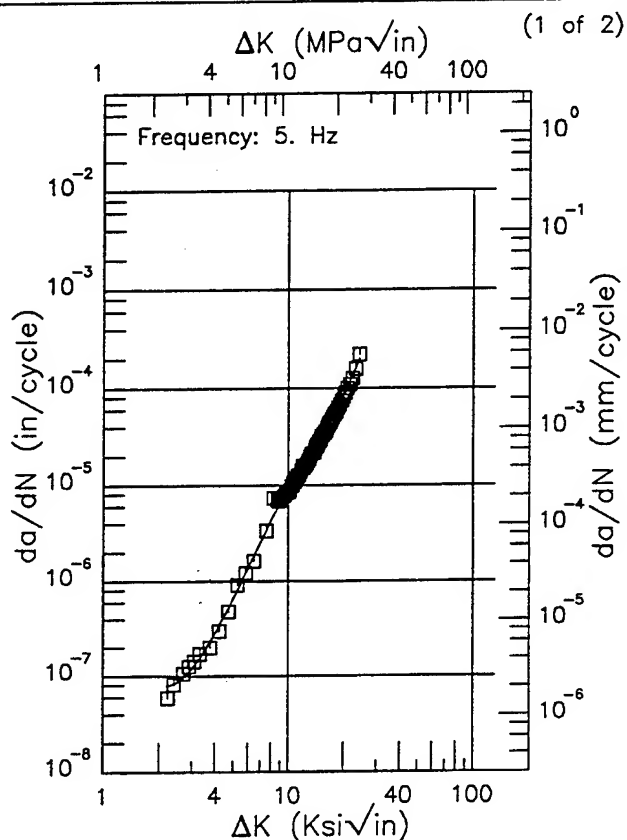
Yield Strength: 45 ksi
Ult. Strength: 69 ksi
Specimen Thk: 0.039 in.
Specimen Width: 16 in.
Ref: 87398



F | 2024 |

Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: 0.4
 Environment: LAB AIR; RT

Yield Strength: 45.0–52.5 ksi
 Ult. Strength: 67.5 ksi
 Specimen Thk: 0.088–0.089 in.
 Specimen Width: 12.012–12.014 in.
 Ref: DA005;DA004



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
2.21 (min)	0.0777
2.5	0.0857
3.	0.119
3.5	0.179
4.	0.278
5.	0.646
6.	1.36
7.	2.55
8.	4.29
9.	6.57
10.	9.28
13.	19.7
16.	36.6
20.	84.2
24.21 (max)	203.

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
2.53 (min)	0.0616
3.	0.0860
3.5	0.129
4.	0.198
5.	0.453
6.	0.966
7.	1.90
8.	3.45
9.	5.85
10.	9.34
16.	62.1
20.	134.
30.	653.
40.	2663.
51.23 (max)	24121.

RMS %
 Error
 9.02

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error
 14.32

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.5.3.1.17

Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: 0.8
 Environment: LAB AIR; RT

Yield Strength: 15.0–52.5 ksi
 Ult. Strength: 67.5 ksi
 Specimen Thk: 0.086–0.089 in.
 Specimen Width: 11.998–12.012 in.
 Ref: DA005; DA004

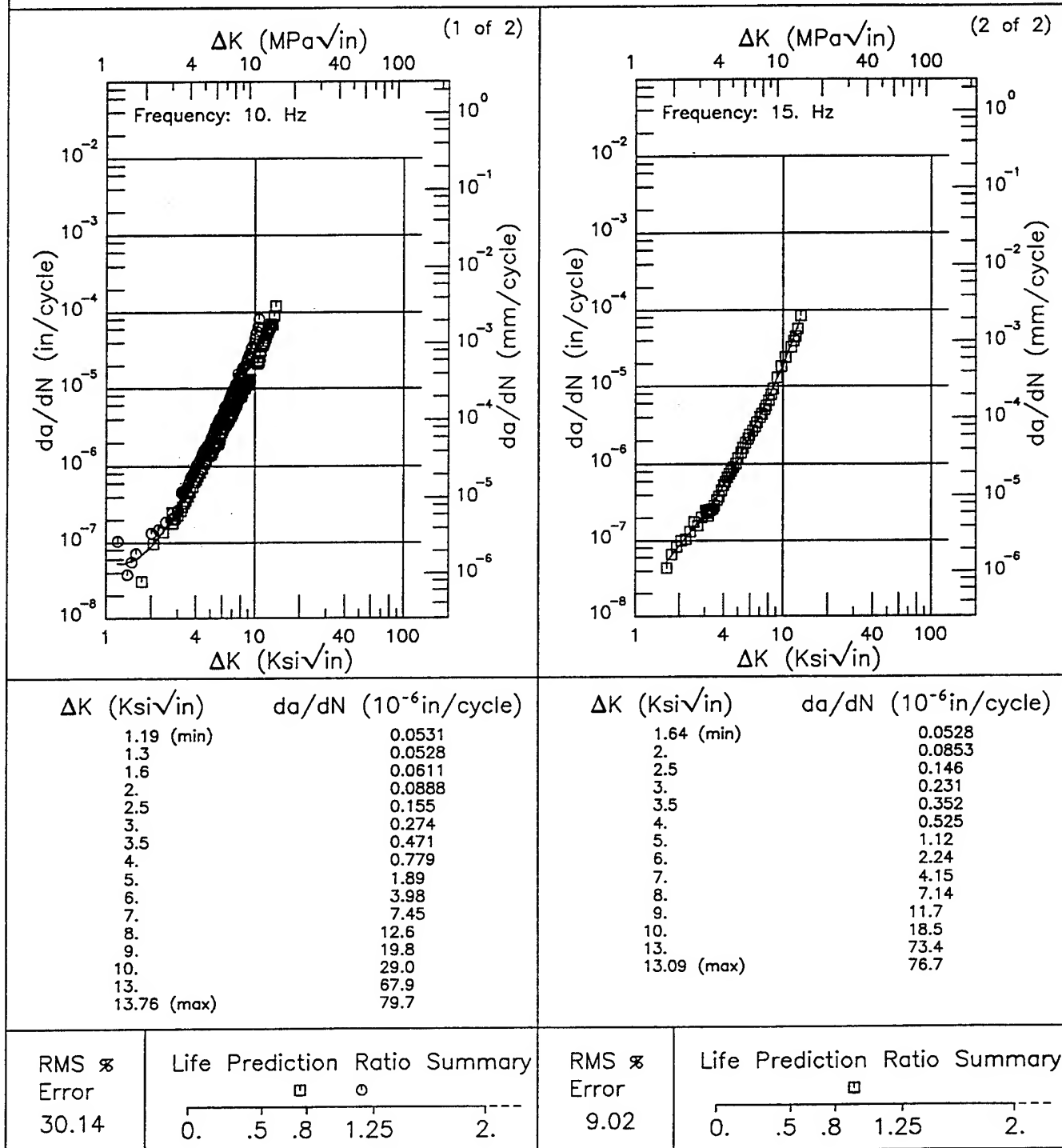
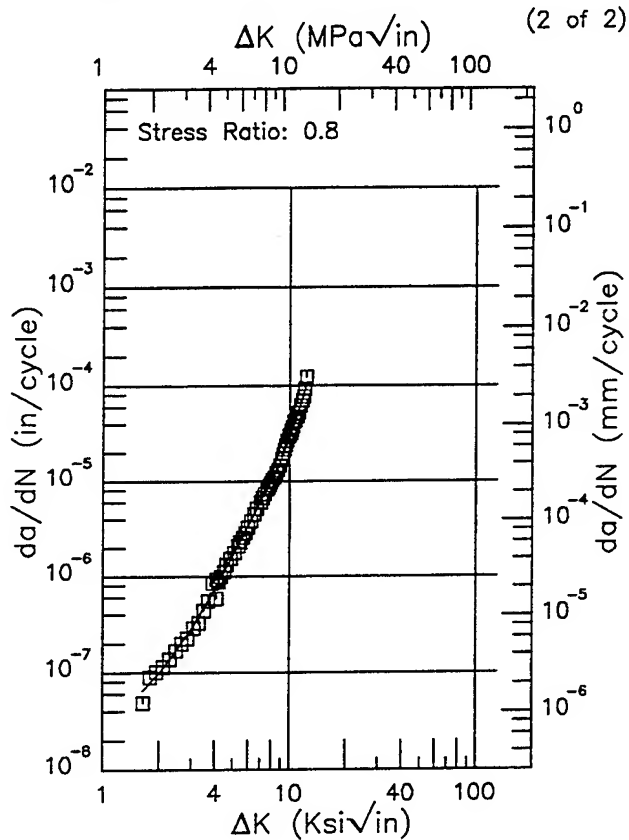
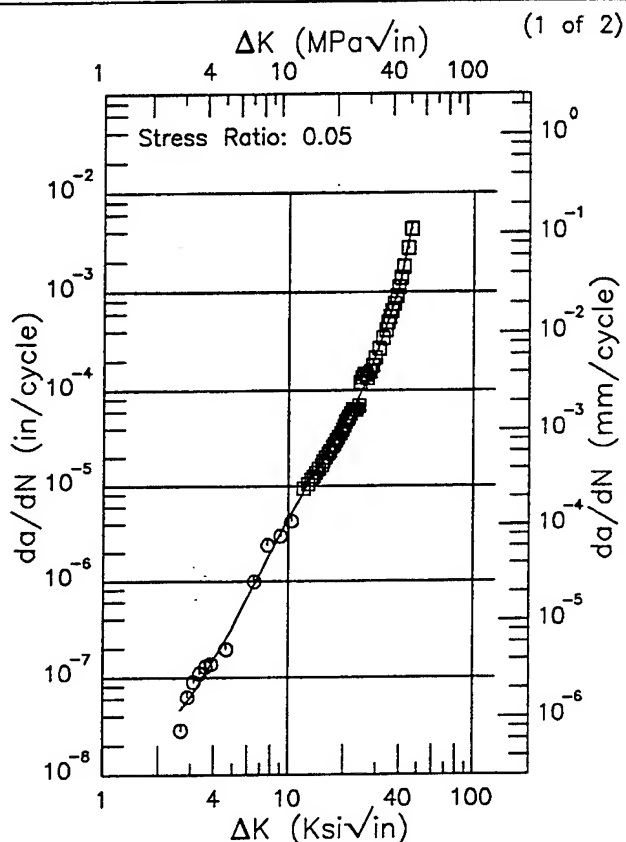


Figure 7.5.3.1.18

R | 2024 |

Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 2 - 10 Hz
 Environment: LAB AIR; RT

Yield Strength: 45.1 ksi
 Ult. Strength: 65.8 ksi
 Specimen Thk: 0.088 - 0.089 in.
 Specimen Width: 9.68 - 9.72 in.
 Ref: DA004



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
2.66 (min)	0.0466
3.	0.0635
3.5	0.0998
4.	0.154
5.	0.337
6.	0.665
7.	1.20
8.	1.99
9.	3.09
10.	4.55
16.	21.1
20.	42.4
30.	242.
40.	1204.
45.93 (max)	4349.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
1.64 (min)	0.0655
2.	0.0991
2.5	0.172
3.	0.286
3.5	0.461
4.	0.723
5.	1.65
6.	3.34
7.	6.04
8.	10.0
9.	16.6
10.	28.9
12.29 (max)	100.

RMS $\%$
 Error
 13.49

Life Prediction Ratio Summary

 0. .5 .8 1.25 2.

RMS $\%$
 Error
 8.21

Life Prediction Ratio Summary

 0. .5 .8 1.25 2.

Figure 7.5.3.1.19

Condition/Ht: T3
 Form: 0.9 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 0.5 - 15 Hz
 Environment: LAB AIR; RT

Yield Strength: 45.1 ksi
 Ult. Strength: 65.8 ksi
 Specimen Thk: 0.089 in.
 Specimen Width: 9.705 in.
 Ref: DA004

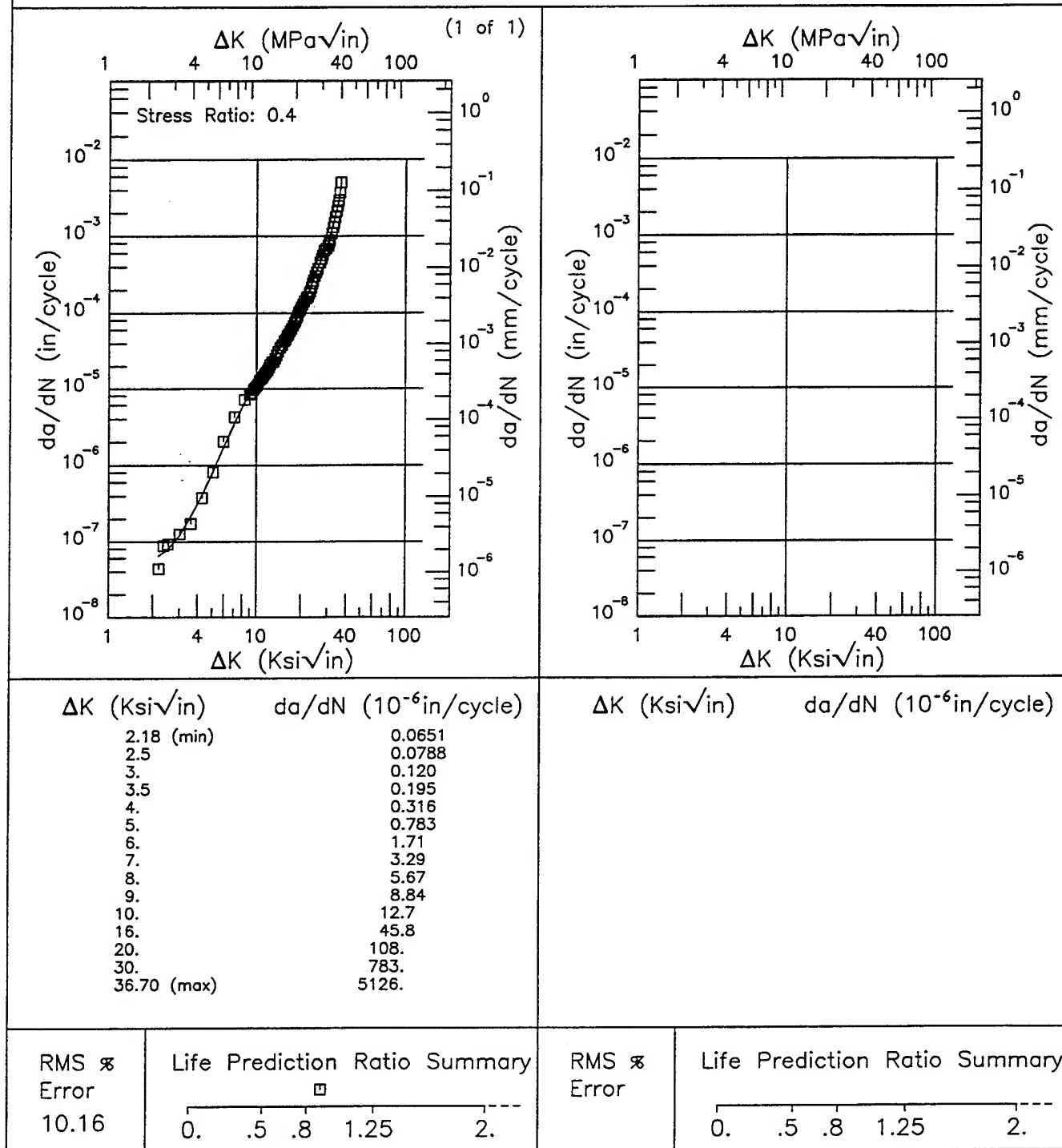


Figure 7.5.3.1.20

R

2024

Condition/Ht: T3
 Form: Sheet
 Specimen Type: CCP (max stress specified)
 Orientation: T-L
 Frequency: 30 Hz
 Environment: LAB AIR; RT

Yield Strength: 47.2 ksi
 Ult. Strength: 68.2 ksi
 Specimen Thk: 0.09 in.
 Specimen Width: 13.985–14.03 in.
 Ref: EFM01

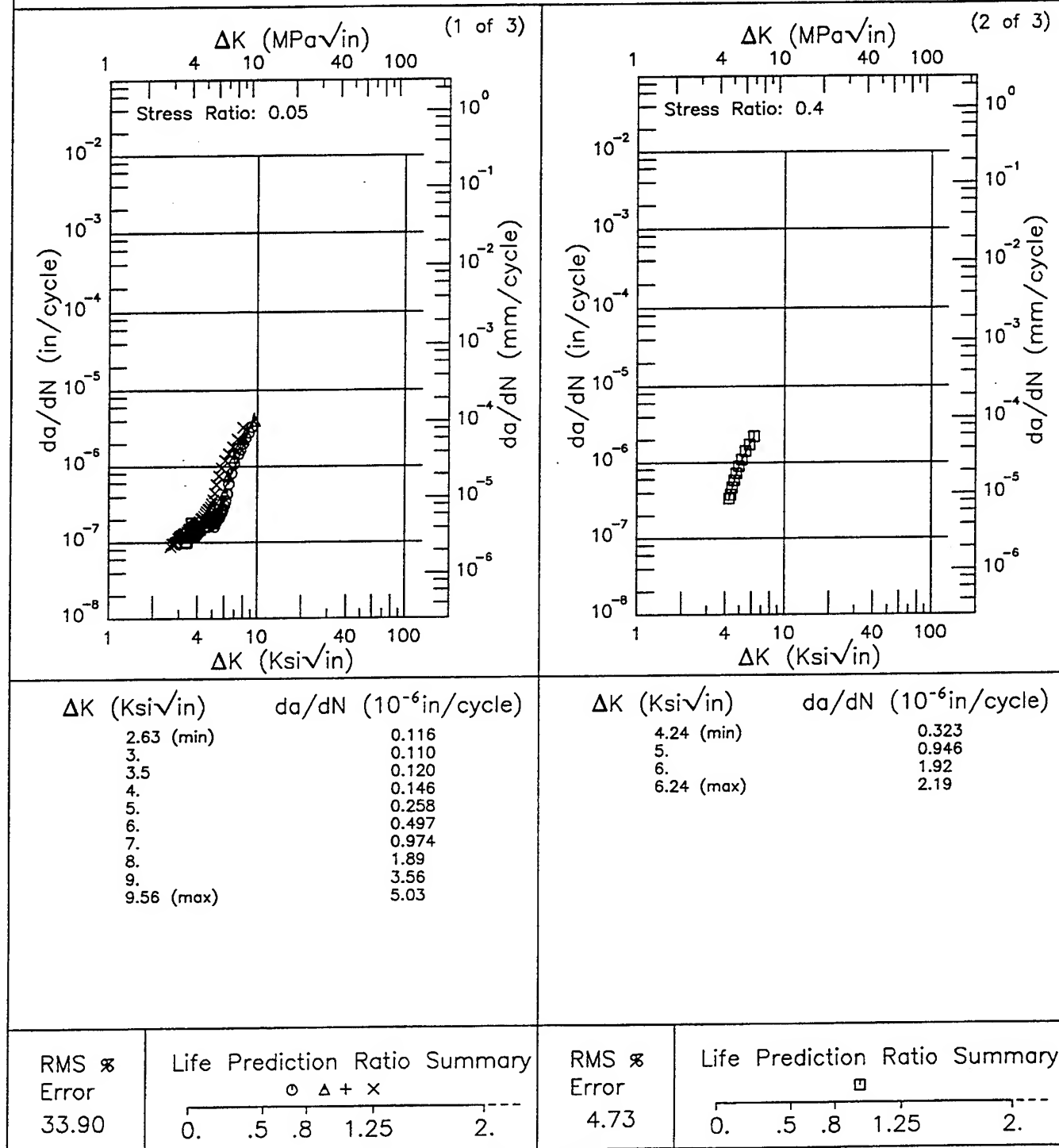


Figure 7.5.3.1.21

Condition/Ht: T3
 Form: Sheet
 Specimen Type: CCP (max stress specified)
 Orientation: T-L
 Frequency: 30 Hz
 Environment: LAB AIR; RT

Yield Strength: 47.2 ksi
 Ult. Strength: 68.2 ksi
 Specimen Thk: 0.09 in.
 Specimen Width: 13.985-14.03 in.
 Ref: EFM01

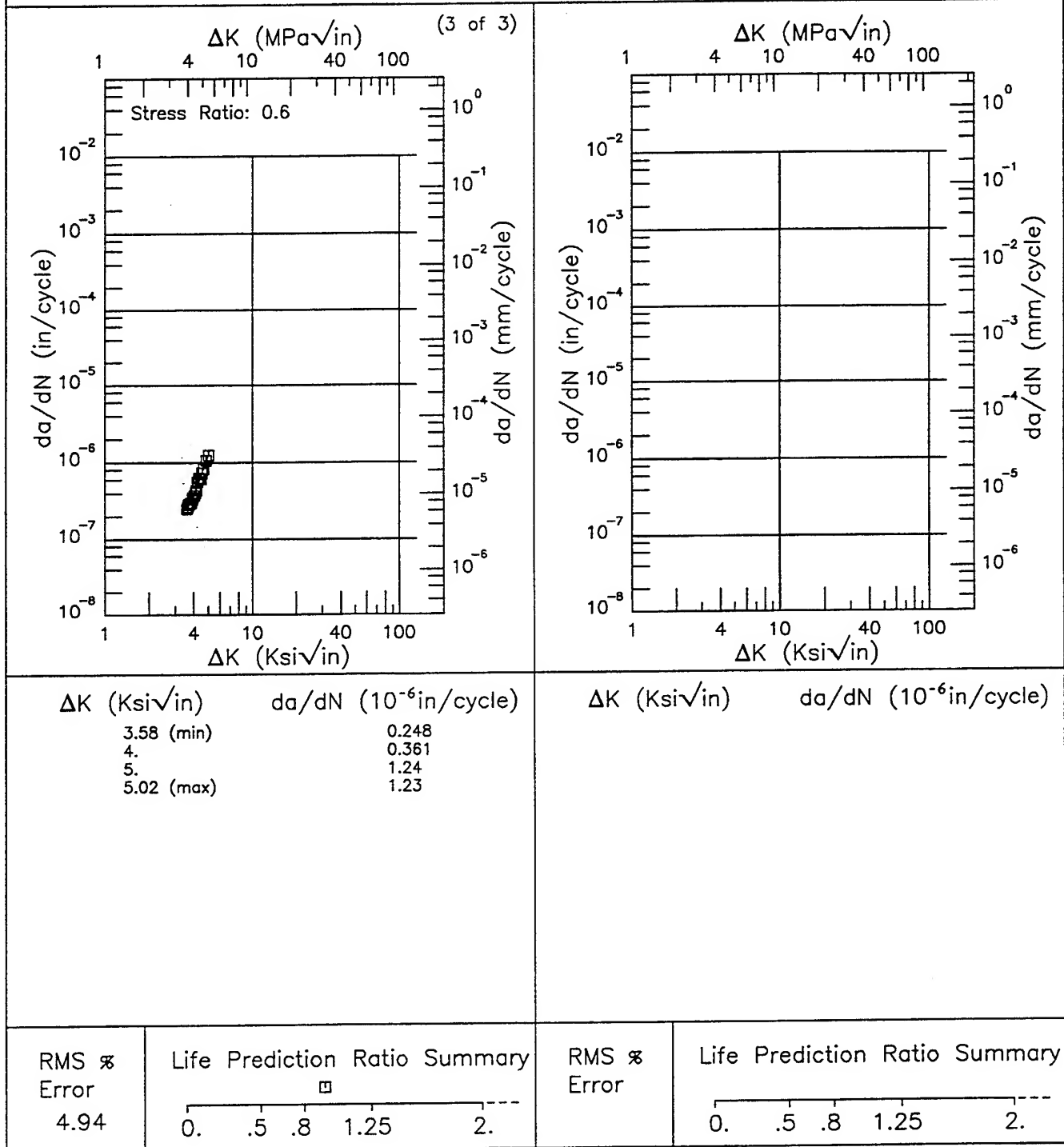


Figure 7.5.3.1.21 (Concluded)

R

2024

Condition/Ht: T3

Form: Sheet

Specimen Type: CCP (max stress specified)

Orientation: T-L

Frequency: 5 - 10 Hz

Environment: LAB AIR; 140°F

Yield Strength: 47.2 ksi

Ult. Strength: 68.2 ksi

Specimen Thk: 0.09 in.

Specimen Width: 36 in.

Ref: EFM01

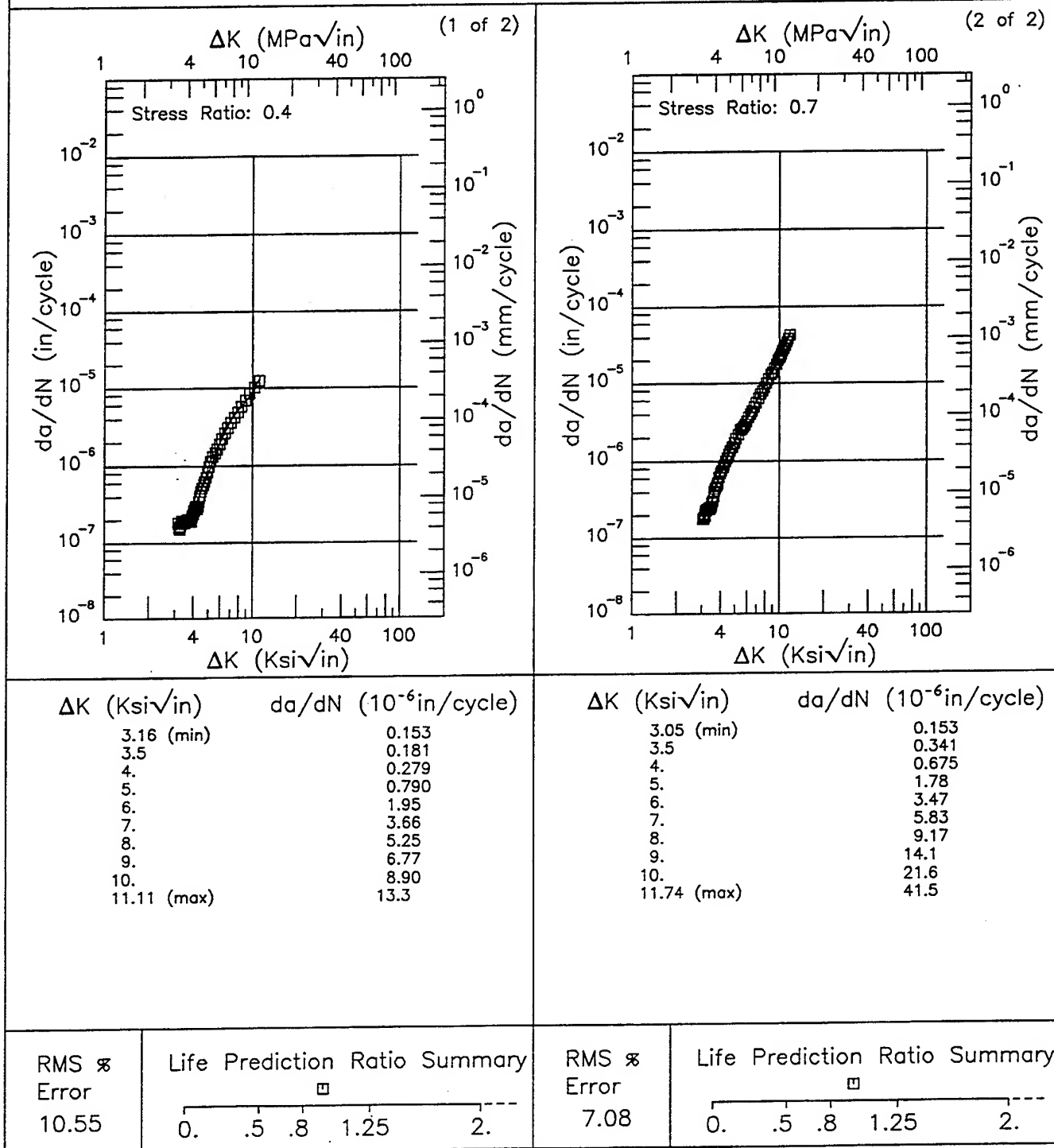


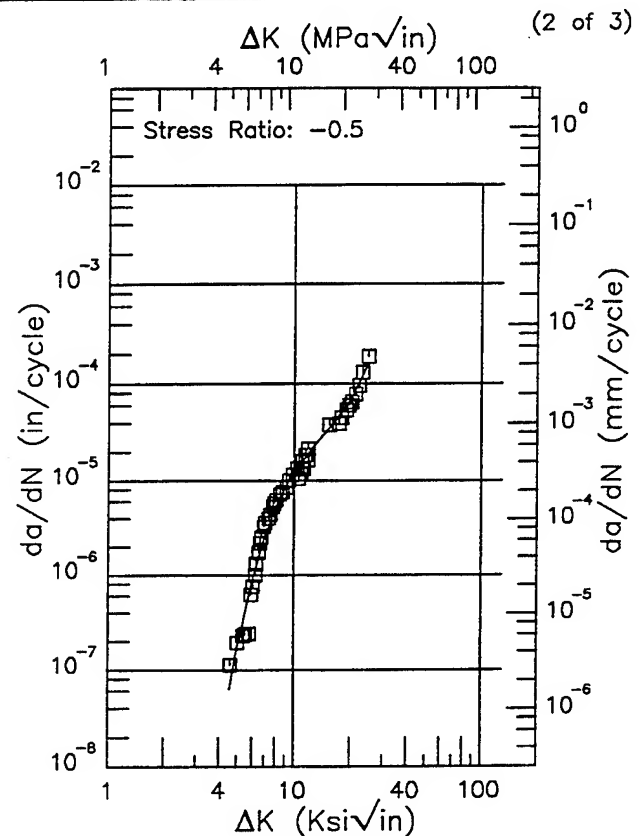
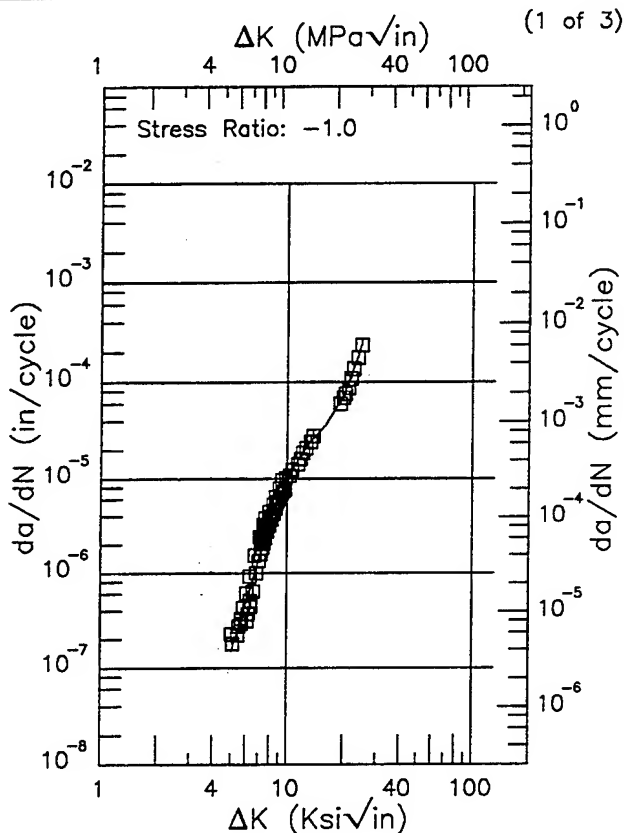
Figure 7.5.3.1.22

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R 2024

Condition/Ht: T3
 Form: 0.25 in. Plate
 Specimen Type: CCP (max stress specified)
 Orientation: L-T
 Frequency: 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 50.9 ksi
 Ult. Strength: 68.5 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 3 in.
 Ref: UD006



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
5.03 (min)	0.148
6.	0.464
7.	1.33
8.	3.17
9.	6.28
10.	10.4
13.	22.8
16.	36.1
20.	72.5
24.85 (max)	241.

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
4.59 (min)	0.0630
5.	0.165
6.	0.880
7.	2.55
8.	5.19
9.	8.52
10.	12.2
13.	24.0
16.	37.9
20.	68.3
24.91 (max)	158.

RMS %
 Error
 23.58

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS %
 Error
 24.24

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

Figure 7.5.3.1.23

Condition/Ht: T3
 Form: 0.25 in. Plate
 Specimen Type: CCP (max stress specified)
 Orientation: L-T
 Frequency: 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 50.9 ksi
 Ult. Strength: 68.5 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 3 in.
 Ref: UD006

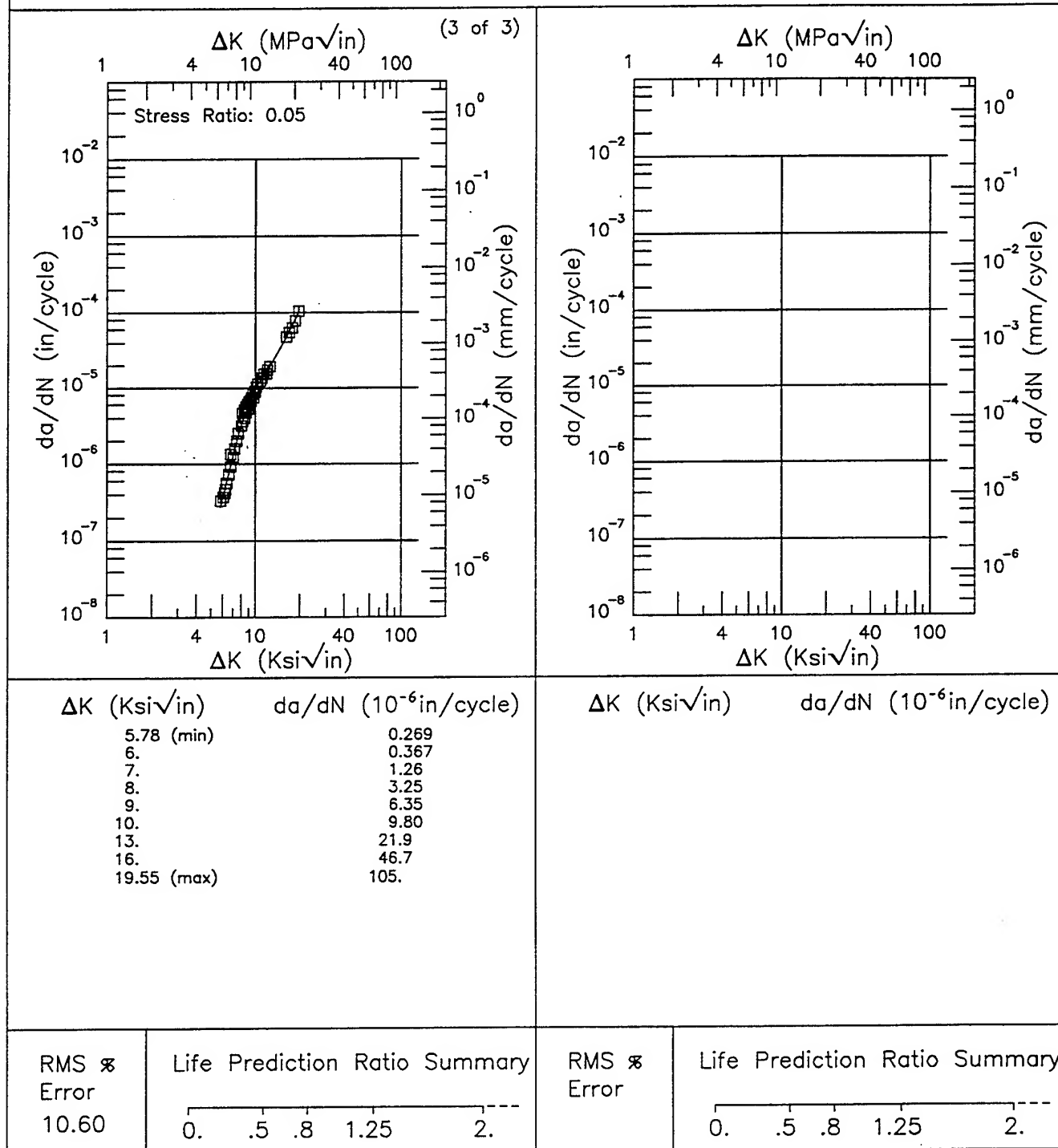


Figure 7.5.3.1.23 (Concluded)

R

2024

Condition/Ht: T3

Form:

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 20 Hz

Environment: DRY AIR; RT

Yield Strength:

Ult. Strength:

Specimen Thk: 0.1 in.

Specimen Width: 6 in.

Ref: PU001

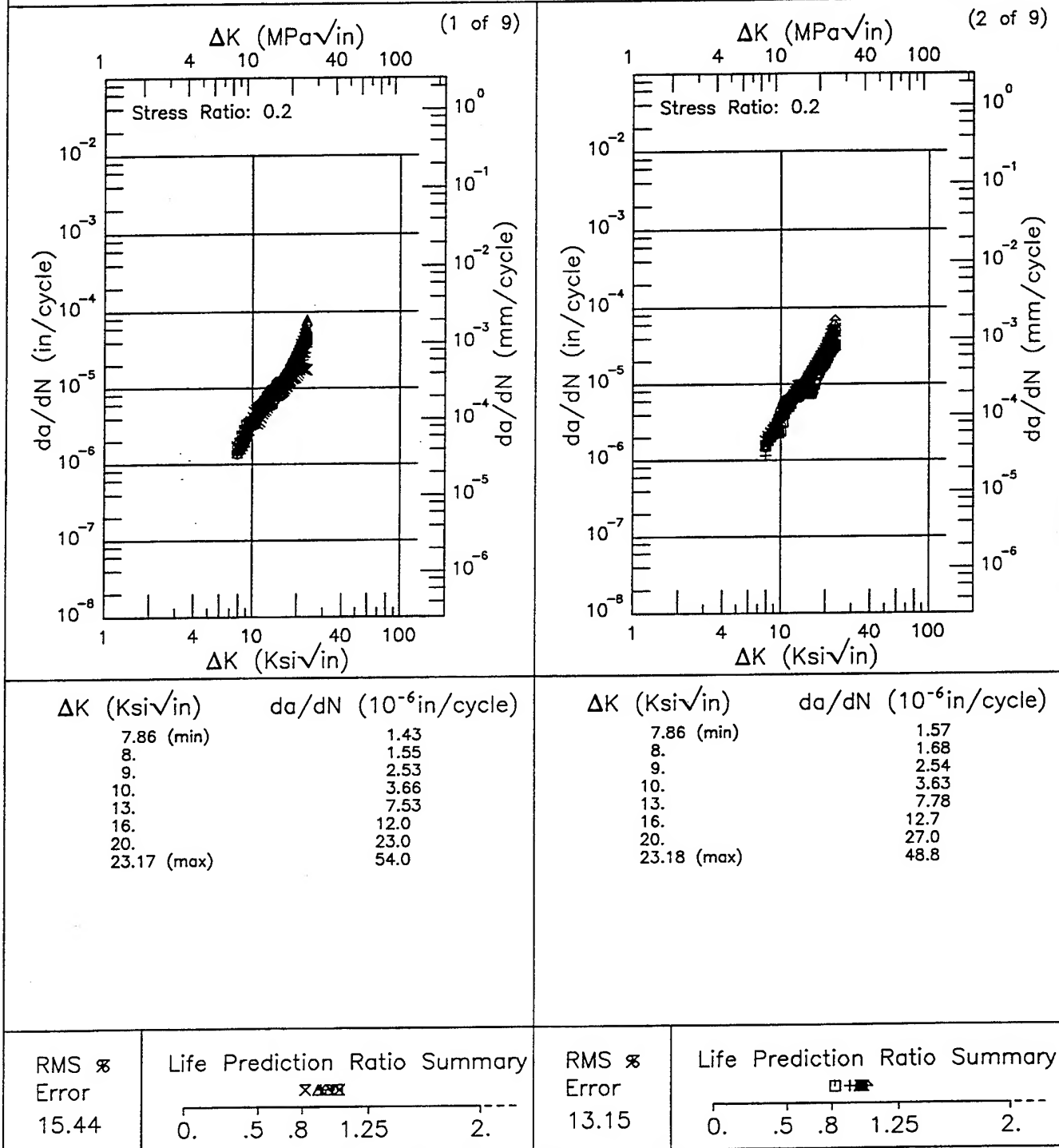
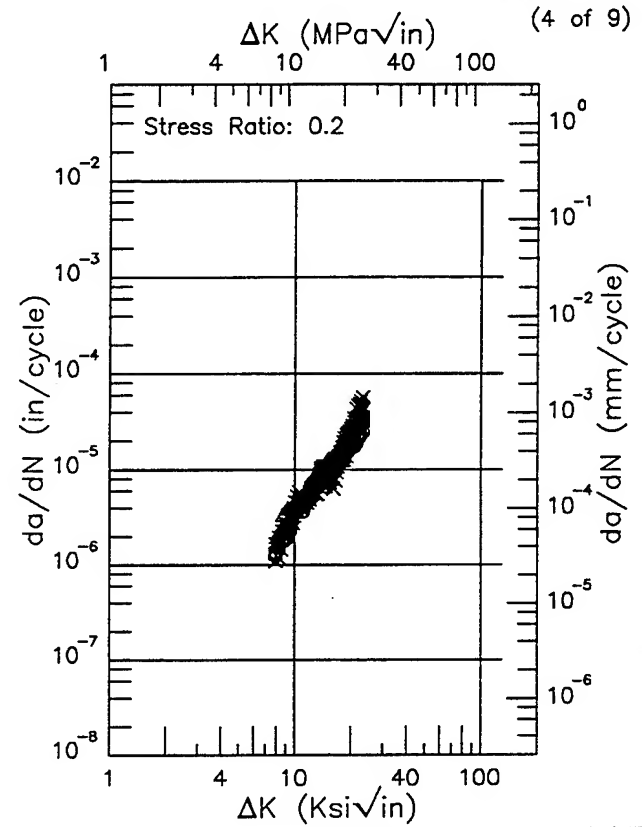
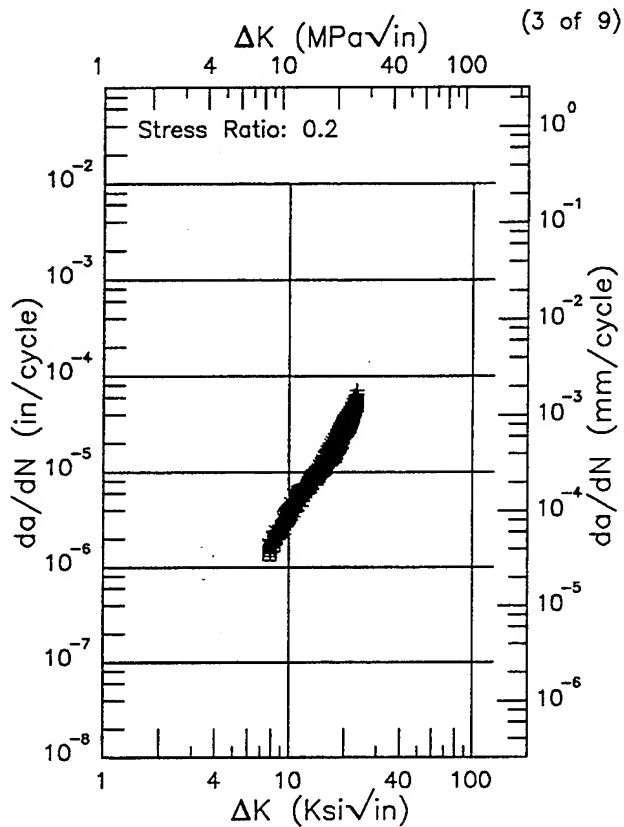


Figure 7.5.3.1.24

Condition/Ht: T3
 Form:
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 20 Hz
 Environment: DRY AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.1 in.
 Specimen Width: 6 in.
 Ref: PU001



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
7.86 (min)	1.48
8.	1.61
9.	2.62
10.	3.72
13.	7.69
16.	13.7
20.	26.7
23.16 (max)	55.2

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
7.84 (min)	1.49
8.	1.63
9.	2.60
10.	3.61
13.	6.66
16.	10.7
20.	22.2
23.16 (max)	45.1

RMS %
 Error
 11.58

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS %
 Error
 16.78

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

Figure 7.5.3.1.24 (Continued)

R

2024

Condition/Ht: T3

Form:

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 20 Hz

Environment: DRY AIR; RT

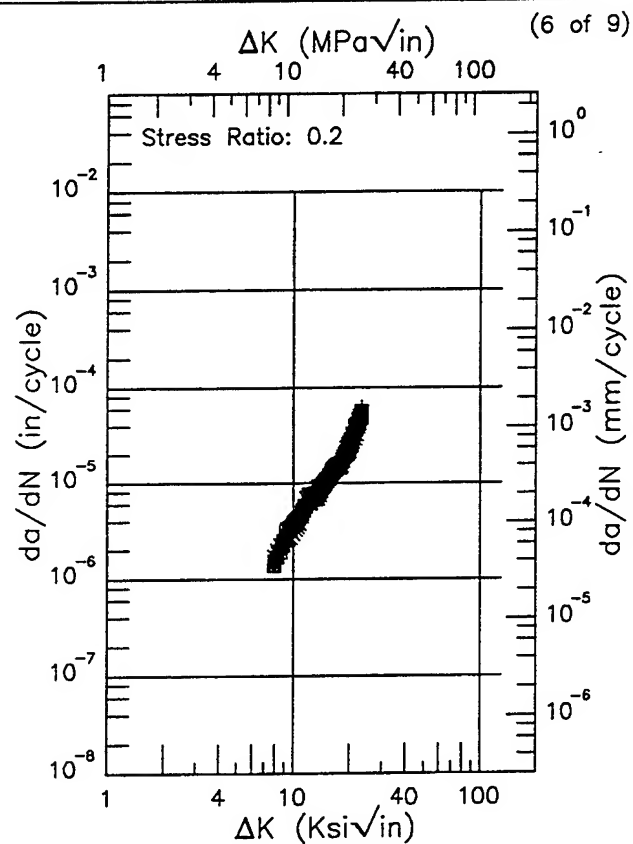
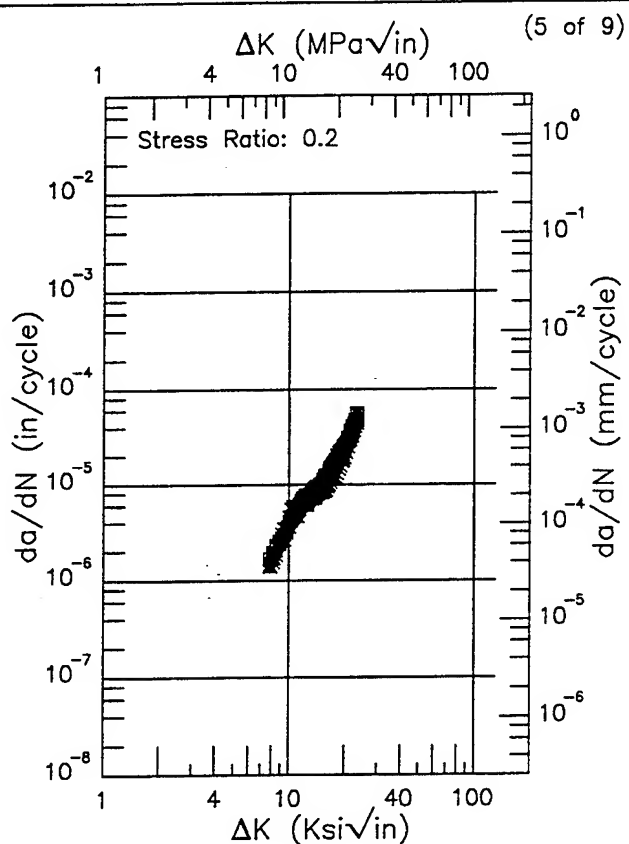
Yield Strength:

Ult. Strength:

Specimen Thk: 0.1 in.

Specimen Width: 6 in.

Ref: PU001

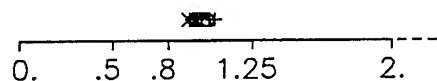


ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
7.86 (min)	1.37
8.	1.51
9.	2.70
10.	3.98
13.	7.66
16.	12.0
20.	24.5
23.16 (max)	51.2

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
7.86 (min)	1.43
8.	1.57
9.	2.65
10.	3.87
13.	7.82
16.	12.6
20.	25.6
23.18 (max)	57.0

RMS \times
Error
12.62

Life Prediction Ratio Summary



RMS \times
Error
10.68

Life Prediction Ratio Summary

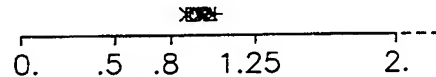
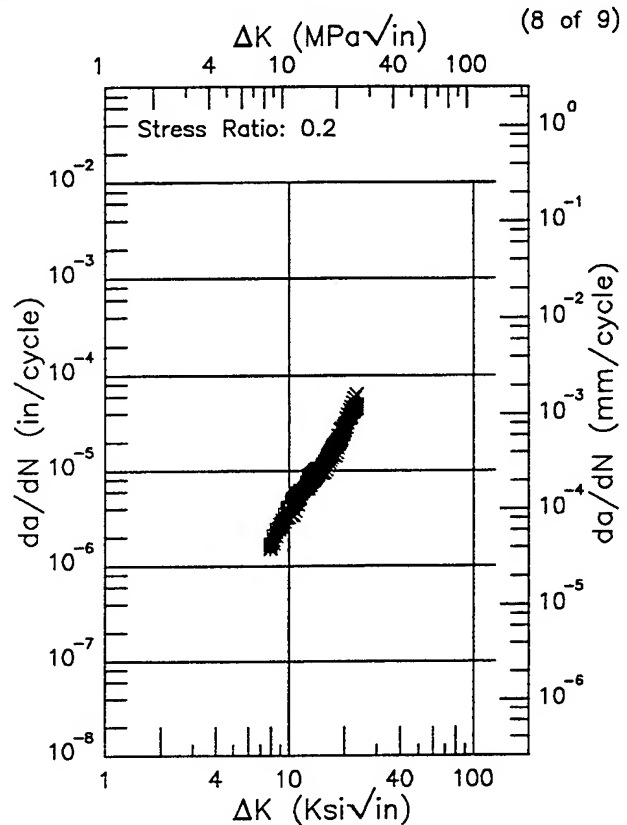
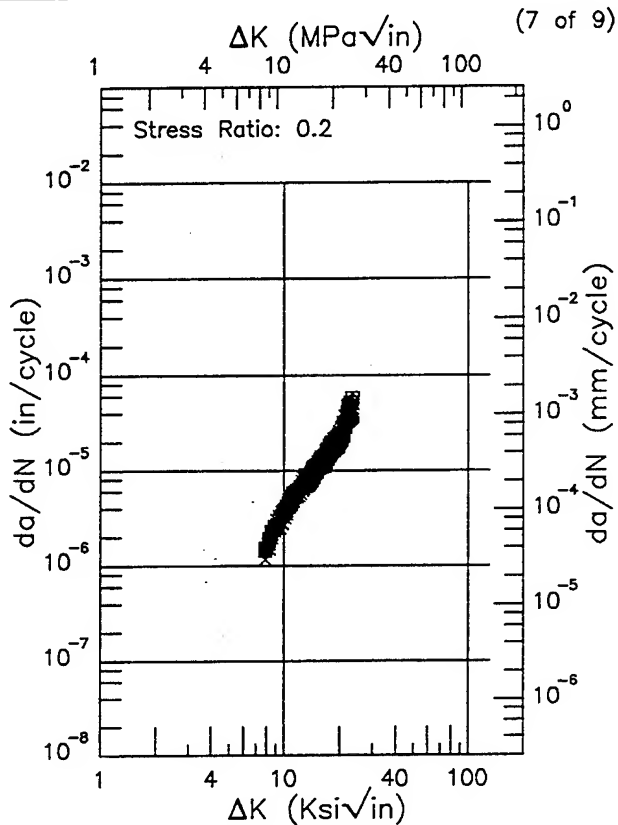


Figure 7.5.3.1.24 (Continued)

Condition/Ht: T3
 Form:
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 20 Hz
 Environment: DRY AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.1 in.
 Specimen Width: 6 in.
 Ref: PU001



ΔK (Ksi√in)	da/dN (10 ⁻⁶ in/cycle)
7.86 (min)	1.59
8.	1.70
9.	2.57
10.	3.61
13.	7.66
16.	13.1
20.	25.3
23.17 (max)	49.1

ΔK (Ksi√in)	da/dN (10 ⁻⁶ in/cycle)
7.85 (min)	1.65
8.	1.76
9.	2.64
10.	3.69
13.	7.74
16.	13.4
20.	27.4
23.15 (max)	52.5

RMS %
 Error
 10.79

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS %
 Error
 11.20

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

Figure 7.5.3.1.24 (Continued)

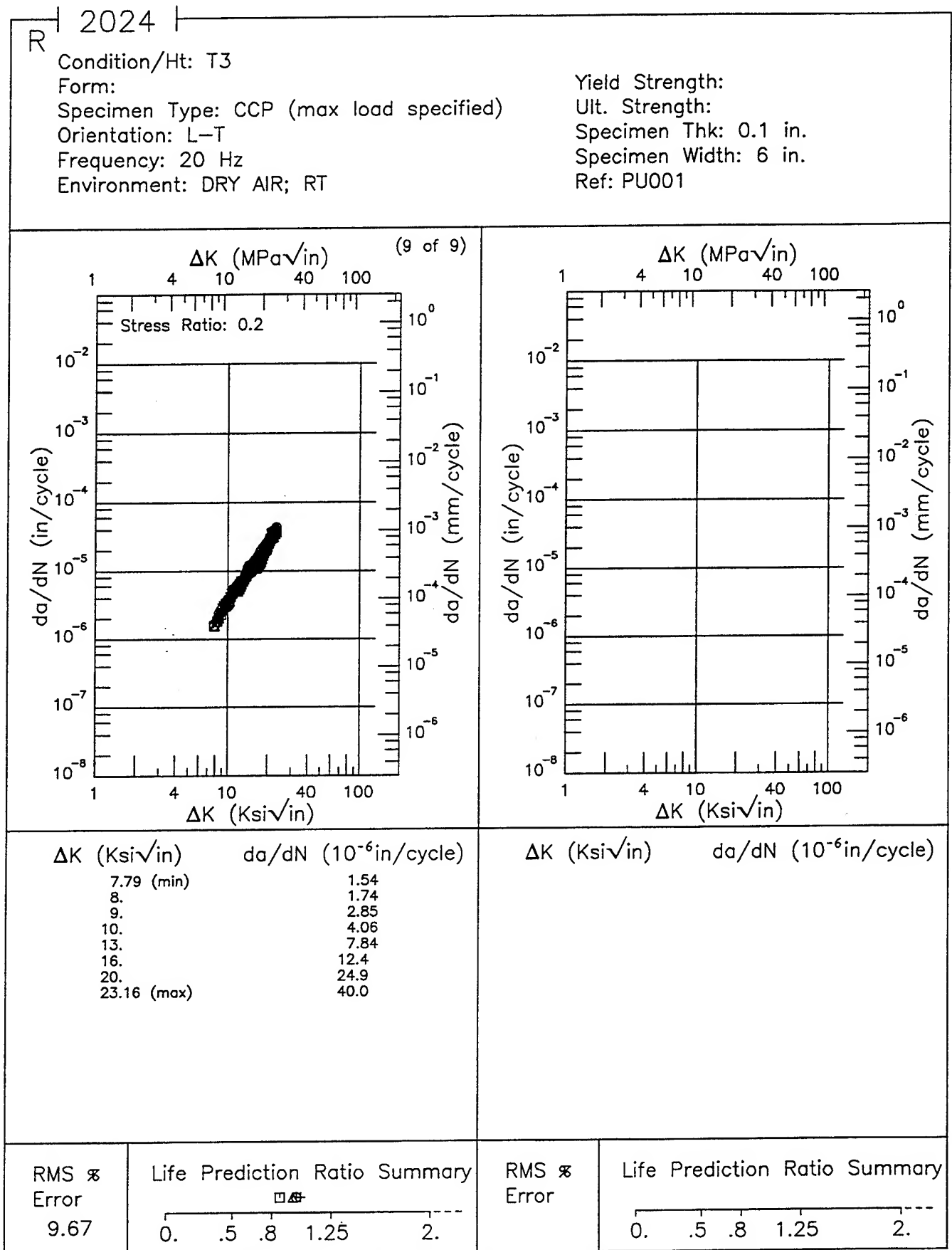


Figure 7.5.3.1.24 (Concluded)

Condition/Ht: T351

Form: Sheet

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 6 Hz

Environment: LAB AIR; RT

Yield Strength: 56.9 ksi

Ult. Strength:

Specimen Thk: 0.181-0.186 in.

Specimen Width: 11.998-12.009 in.

Ref: DA001

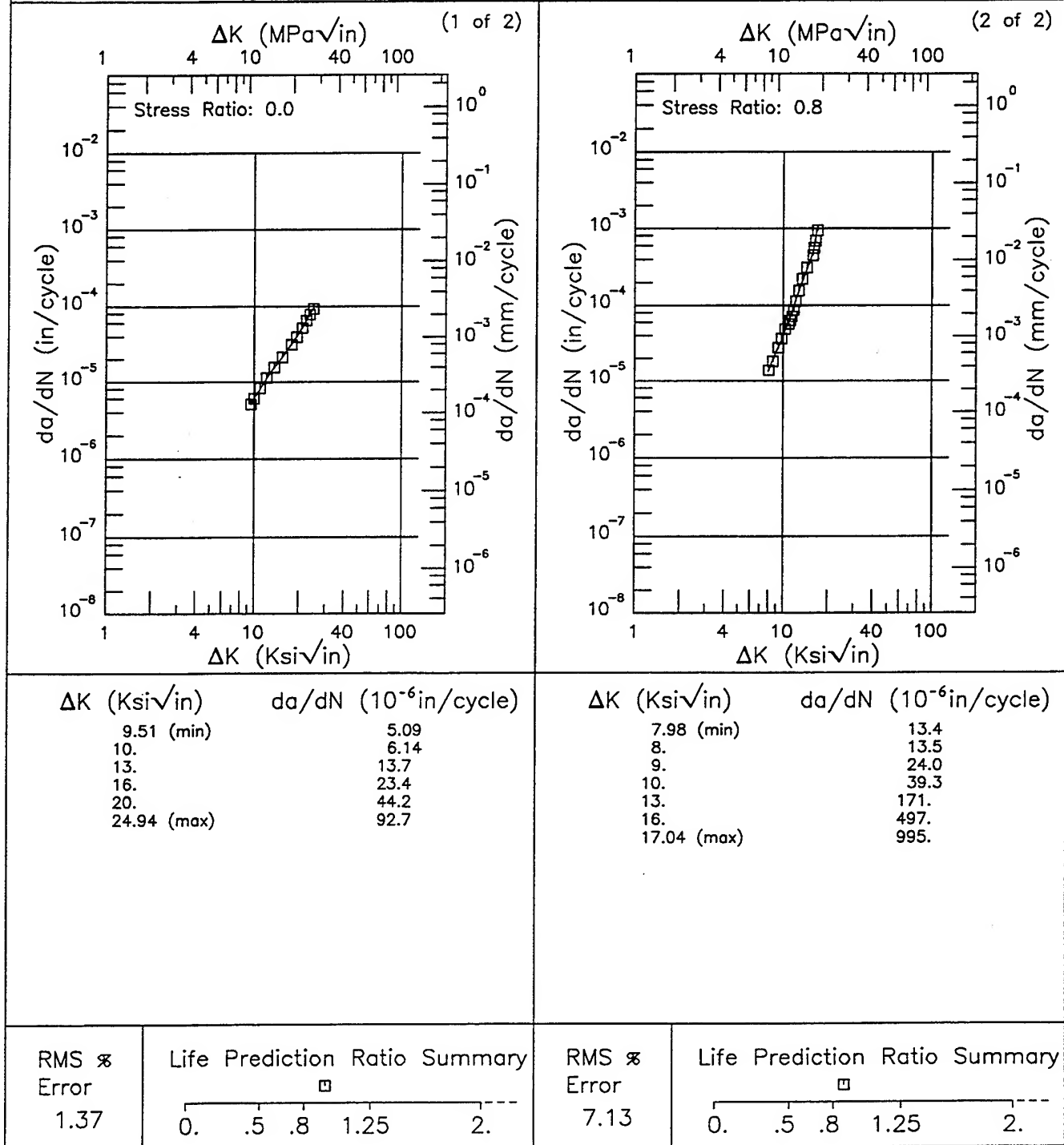


Figure 7.5.3.1.25

R

2024

Condition/Ht: T351

Form: Sheet

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 3 Hz

Environment: LAB AIR; RT

Yield Strength: 56.9 ksi

Ult. Strength:

Specimen Thk: 0.184 in.

Specimen Width: 12.002 in.

Ref: DA001

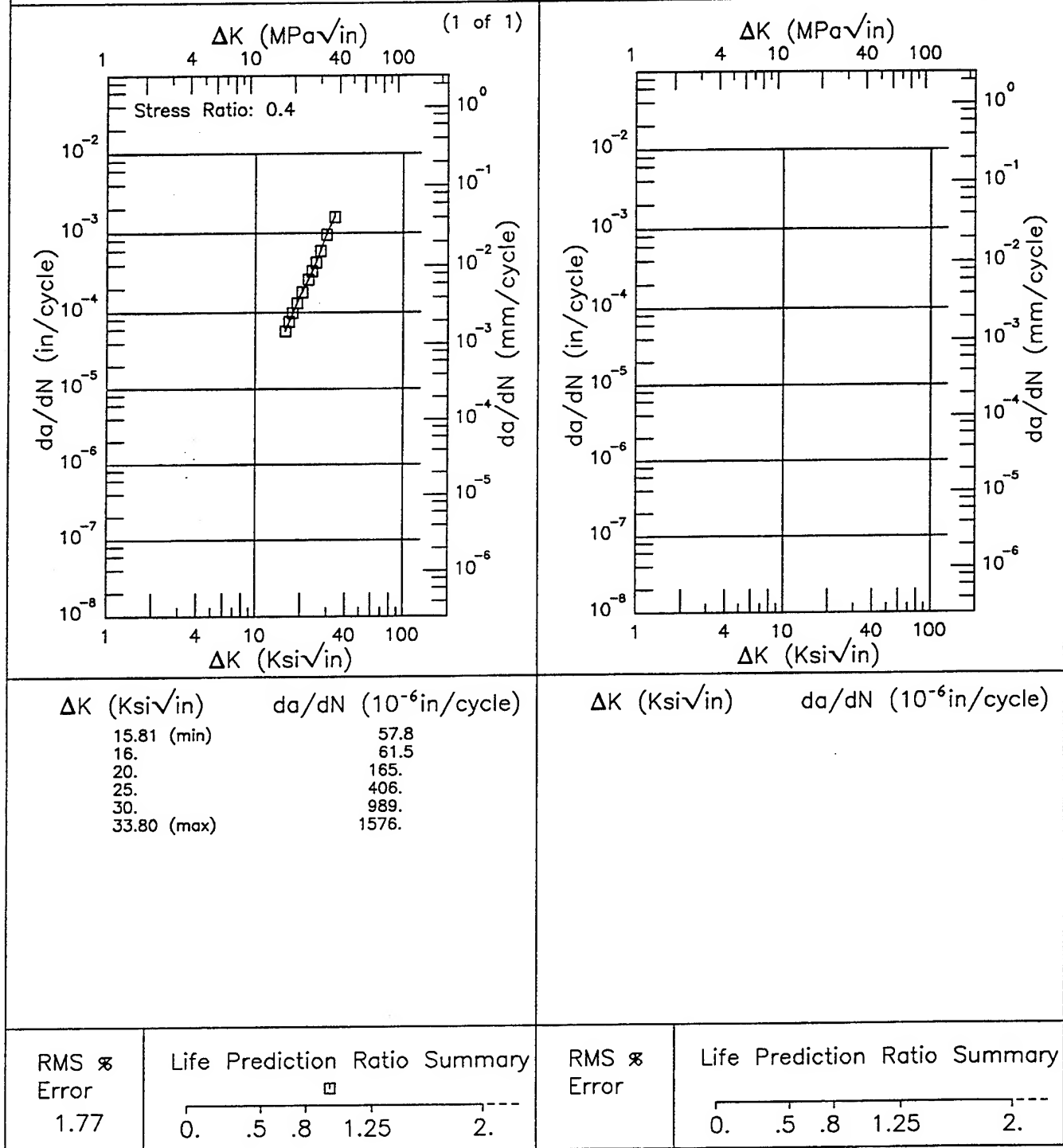


Figure 7.5.3.1.26

Yield Strength: 56.9 ksi
Ult. Strength:
Specimen Thk: 0.184 in.
Specimen Width: 12 in.
Ref: DA001

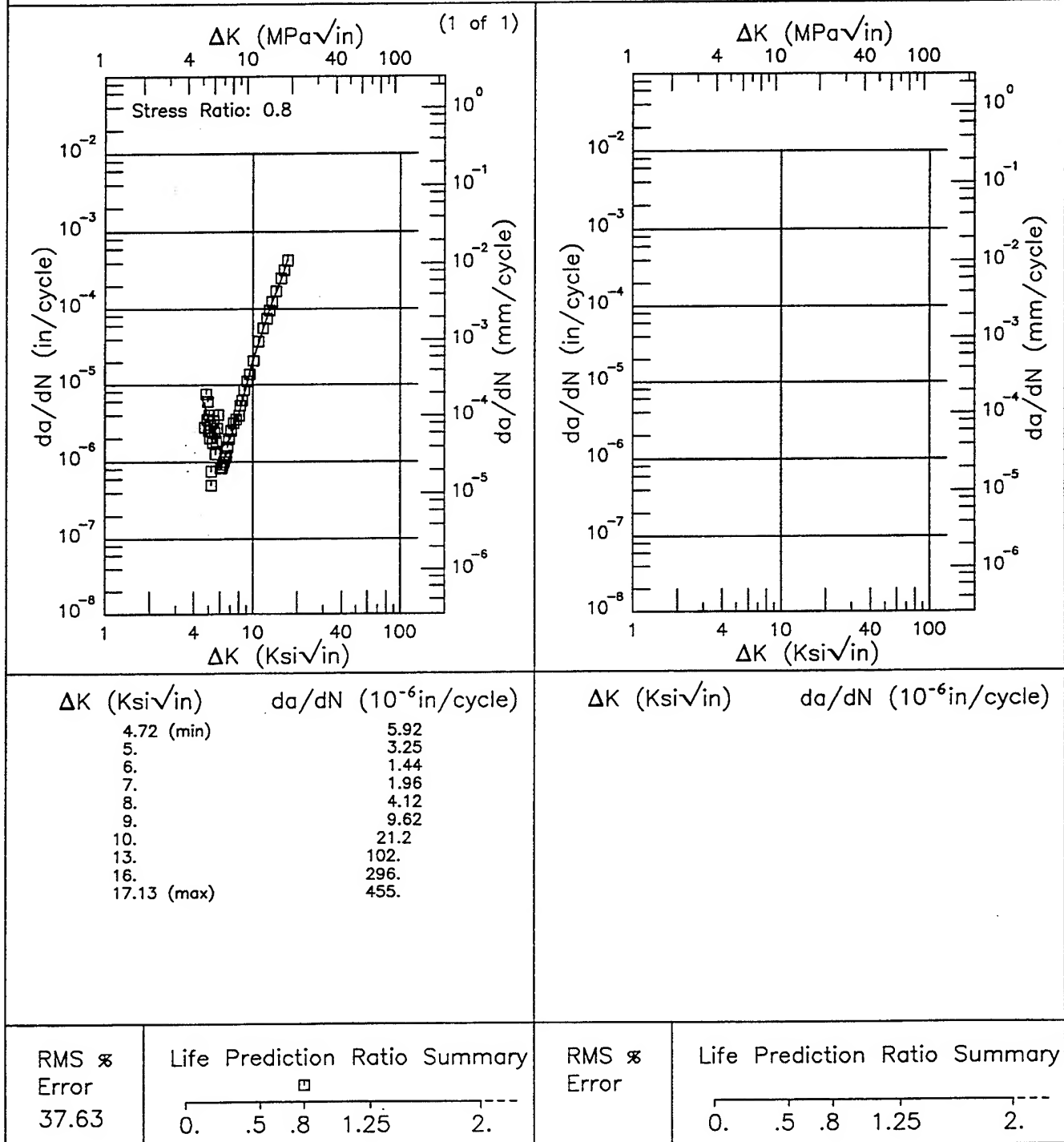


Figure 7.5.3.1.27

EF 2024

Condition/Ht: T351
 Form: Sheet
 Specimen Type: CCP (max stress specified)
 Orientation: L-T
 Stress Ratio: 0.

Yield Strength: 56.9 ksi
 Ult. Strength:
 Specimen Thk: 0.182 - 0.188 in.
 Specimen Width: 11.997 - 12 in.
 Ref: DA001

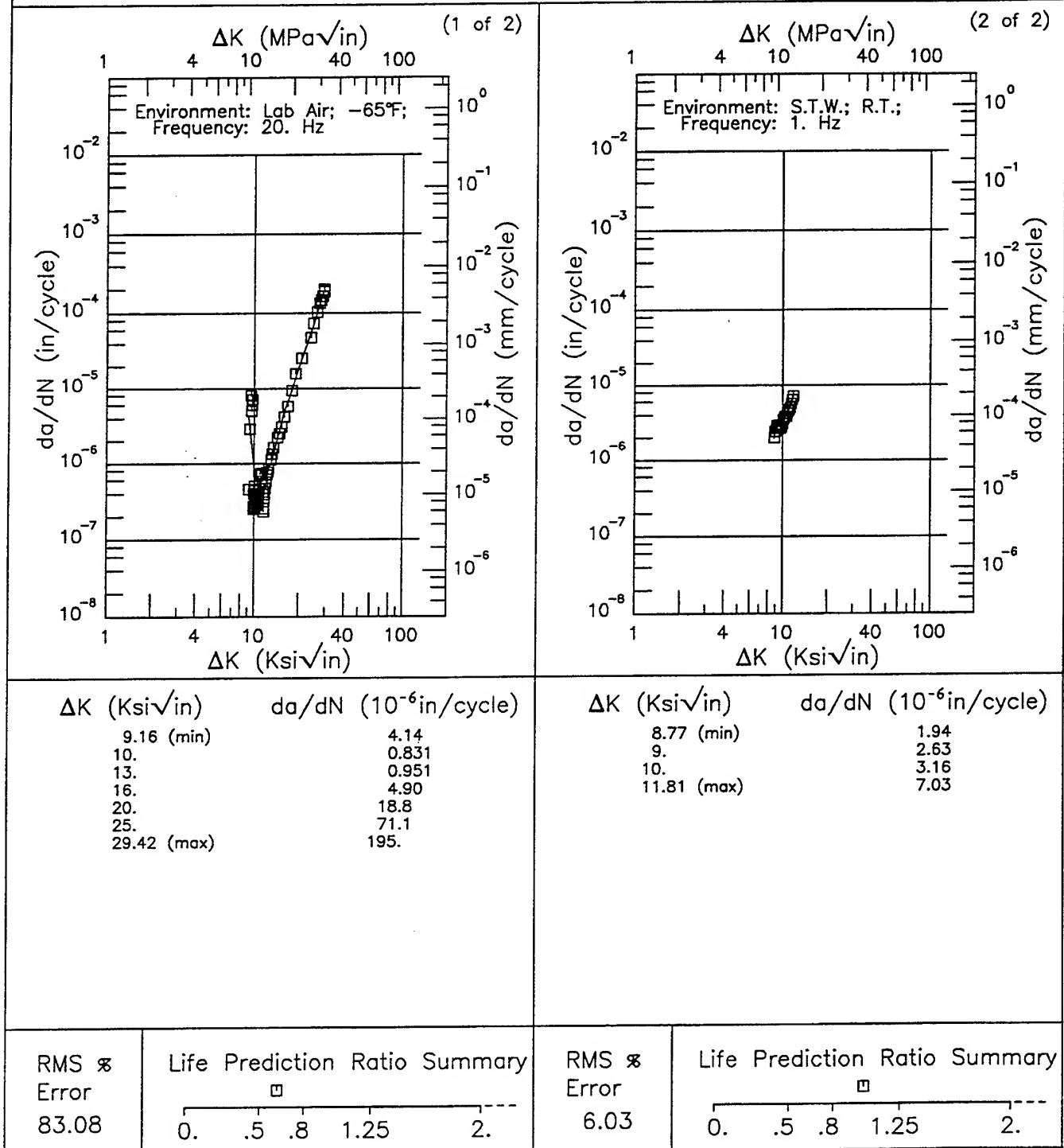


Figure 7.5.3.1.28

Condition/Ht: T351
 Form: Sheet
 Specimen Type: CCP (max stress specified)
 Orientation: L-T
 Frequency: 10 Hz
 Environment: S.T.W.; RT

Yield Strength: 56.9 ksi
 Ult. Strength:
 Specimen Thk: 0.192 in.
 Specimen Width: 12 in.
 Ref: DA001

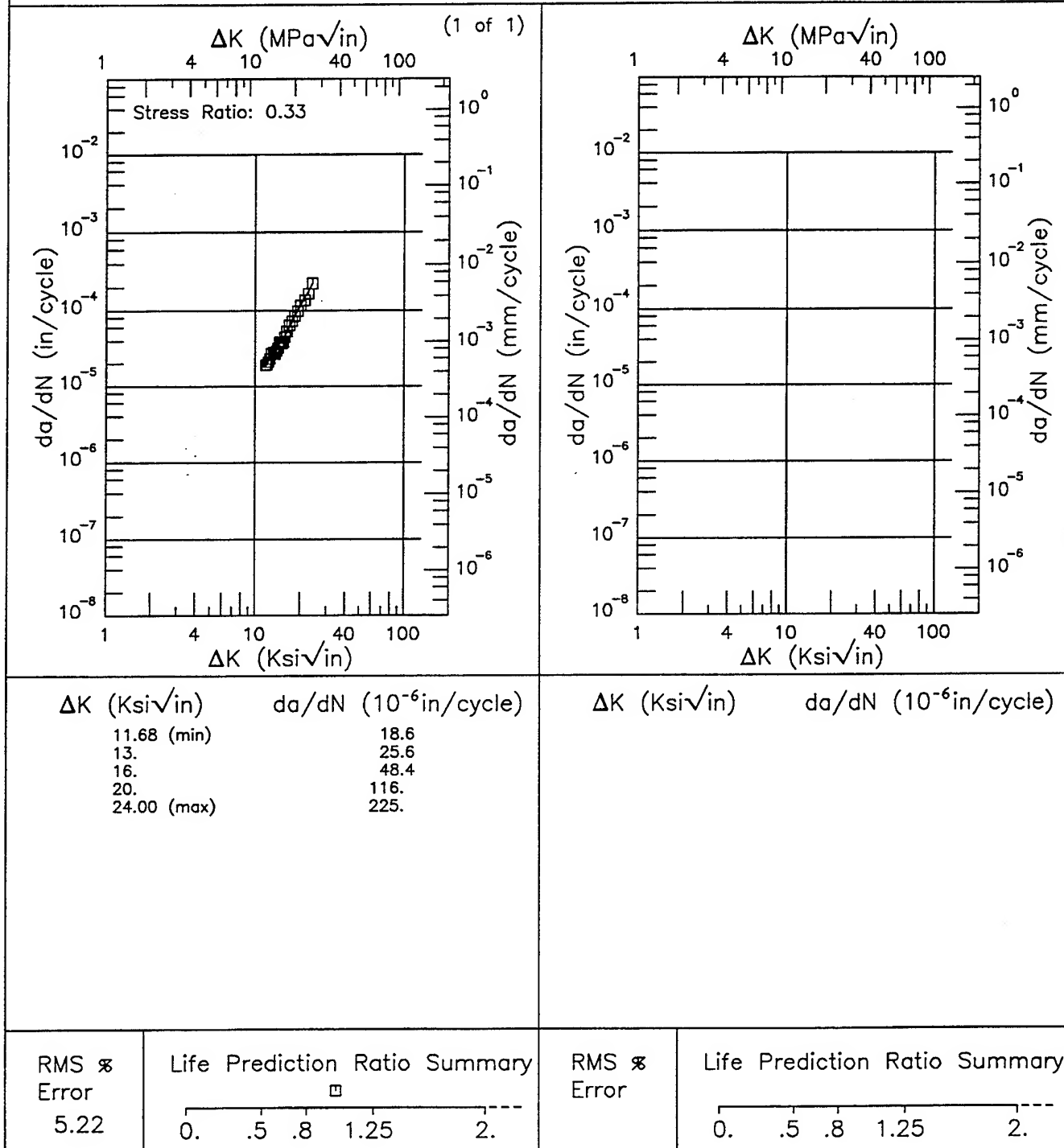


Figure 7.5.3.1.29

R

2024

Condition/Ht: T351

Form: Sheet

Specimen Type: CCP (max stress specified)

Orientation: L-T

Frequency: 9 Hz

Environment: H.H.A.; RT

Yield Strength:

Ult. Strength:

Specimen Thk: 0.163 in.

Specimen Width: 5 in.

Ref: BW002

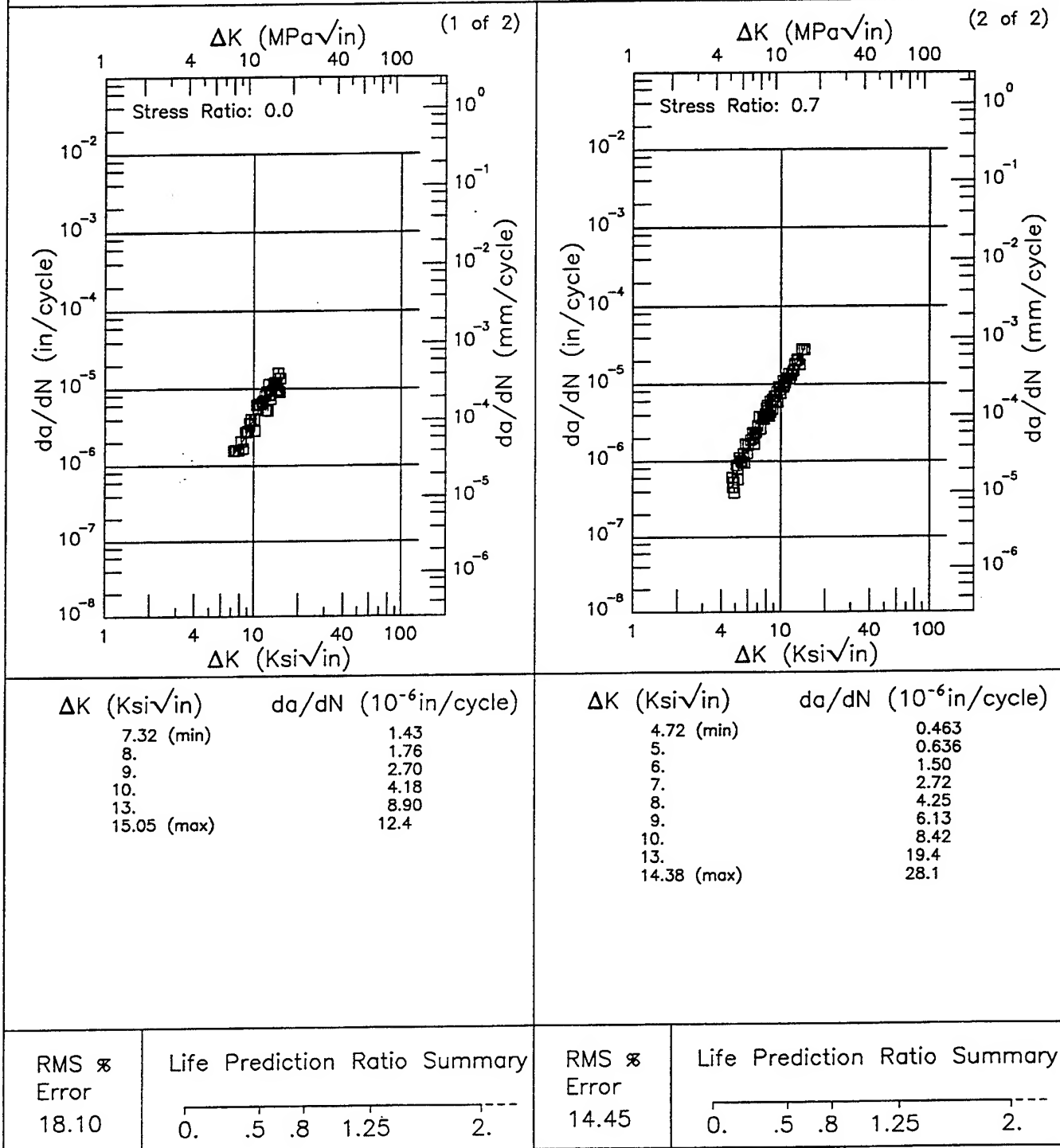
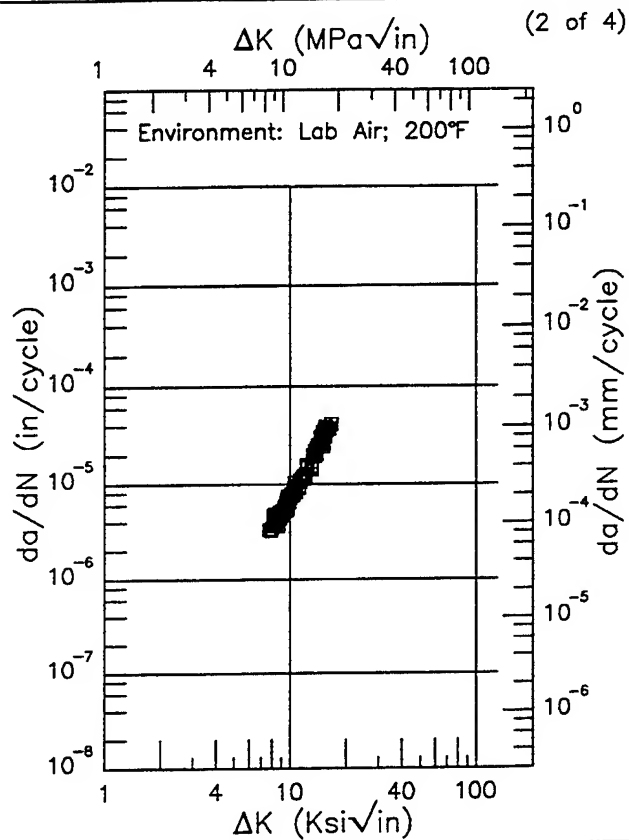
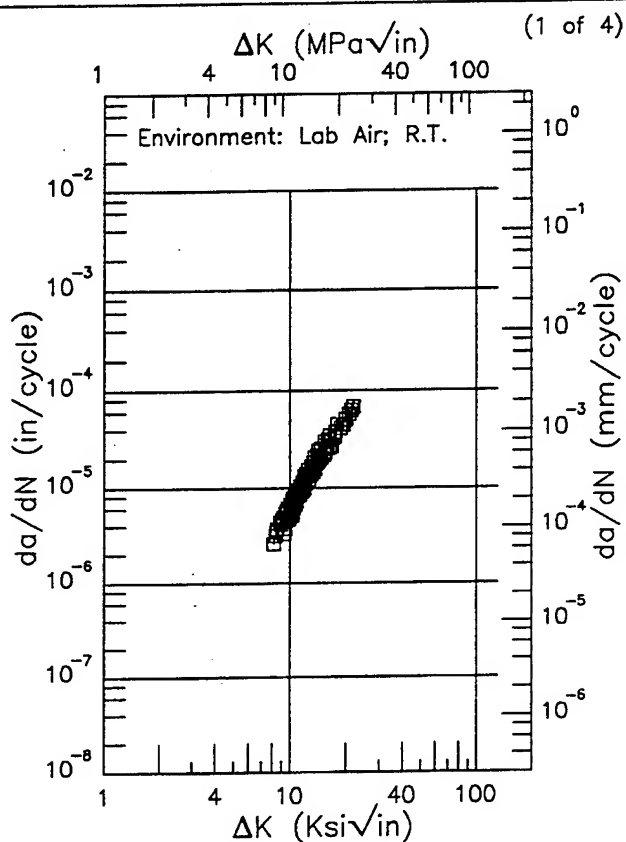


Figure 7.5.3.1.30

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E | 2024 |
 Condition/Ht: T351
 Form: 0.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.01
 Frequency: 20 Hz

Yield Strength: 51.5 ksi
 Ult. Strength: 65.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 2 in.
 Ref: UD009



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
8.19 (min)	2.85
9.	4.05
10.	5.96
13.	14.8
16.	28.3
20.	52.1
21.86 (max)	64.5

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
7.67 (min)	3.14
8.	3.56
9.	5.04
10.	6.94
13.	17.4
16.	36.9
16.64 (max)	41.0

RMS $\%$
 Error
 13.29

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS $\%$
 Error
 9.98

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.5.3.1.31

Condition/Ht: T351
 Form: 0.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.01
 Frequency: 20 Hz

Yield Strength: 51.5 ksi
 Ult. Strength: 65.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 2 in.
 Ref: UD009

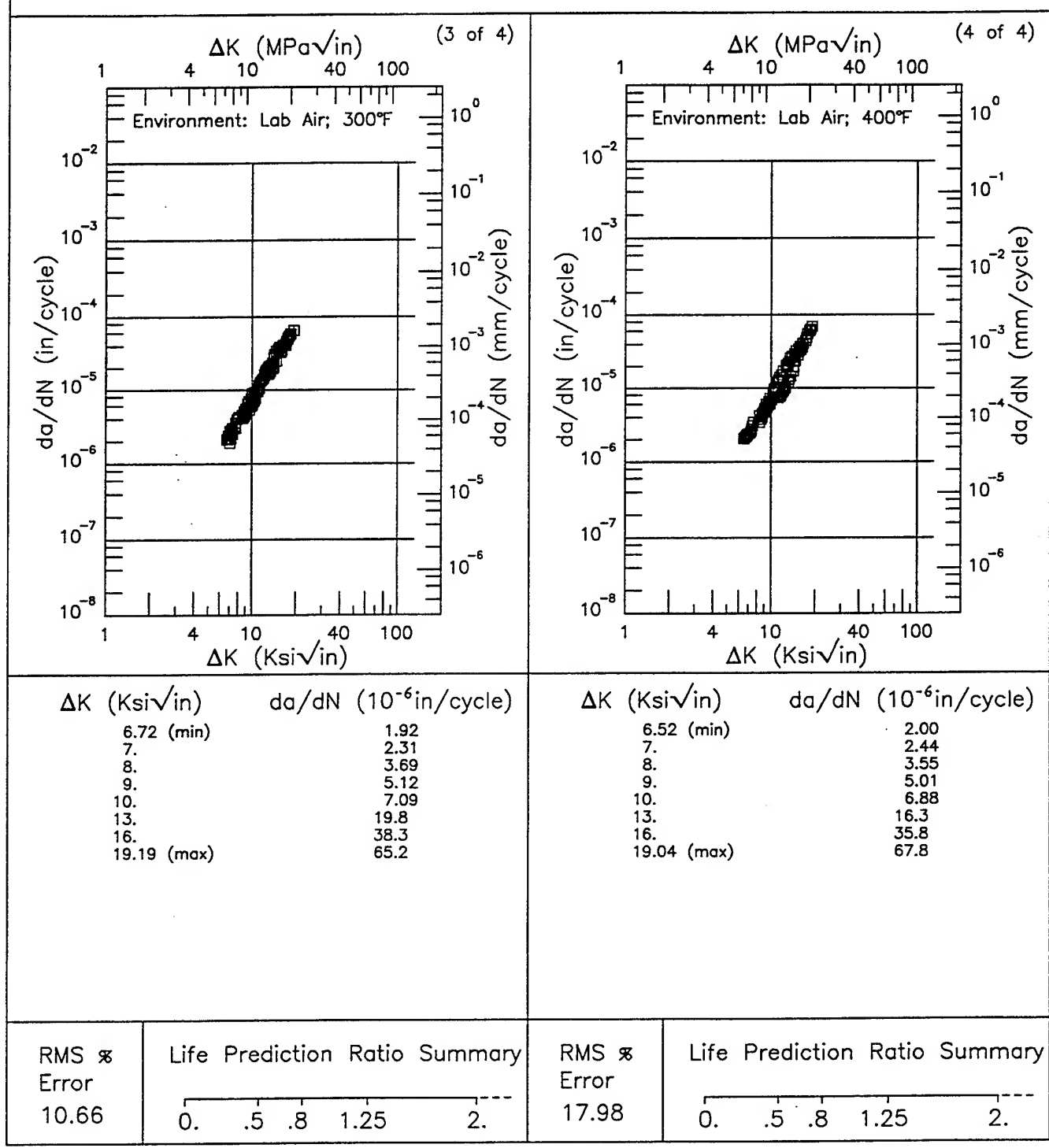


Figure 7.5.3.1.31 (Concluded)

E | 2024 |
 Condition/Ht: T351
 Form: 1 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.05
 Frequency: 1 Hz

Yield Strength: 54.3 – 57 ksi
 Ult. Strength: 70 ksi
 Specimen Thk: 0.246 – 0.25 in.
 Specimen Width: 2 – 2.008 in.
 Ref: DA004;DA005

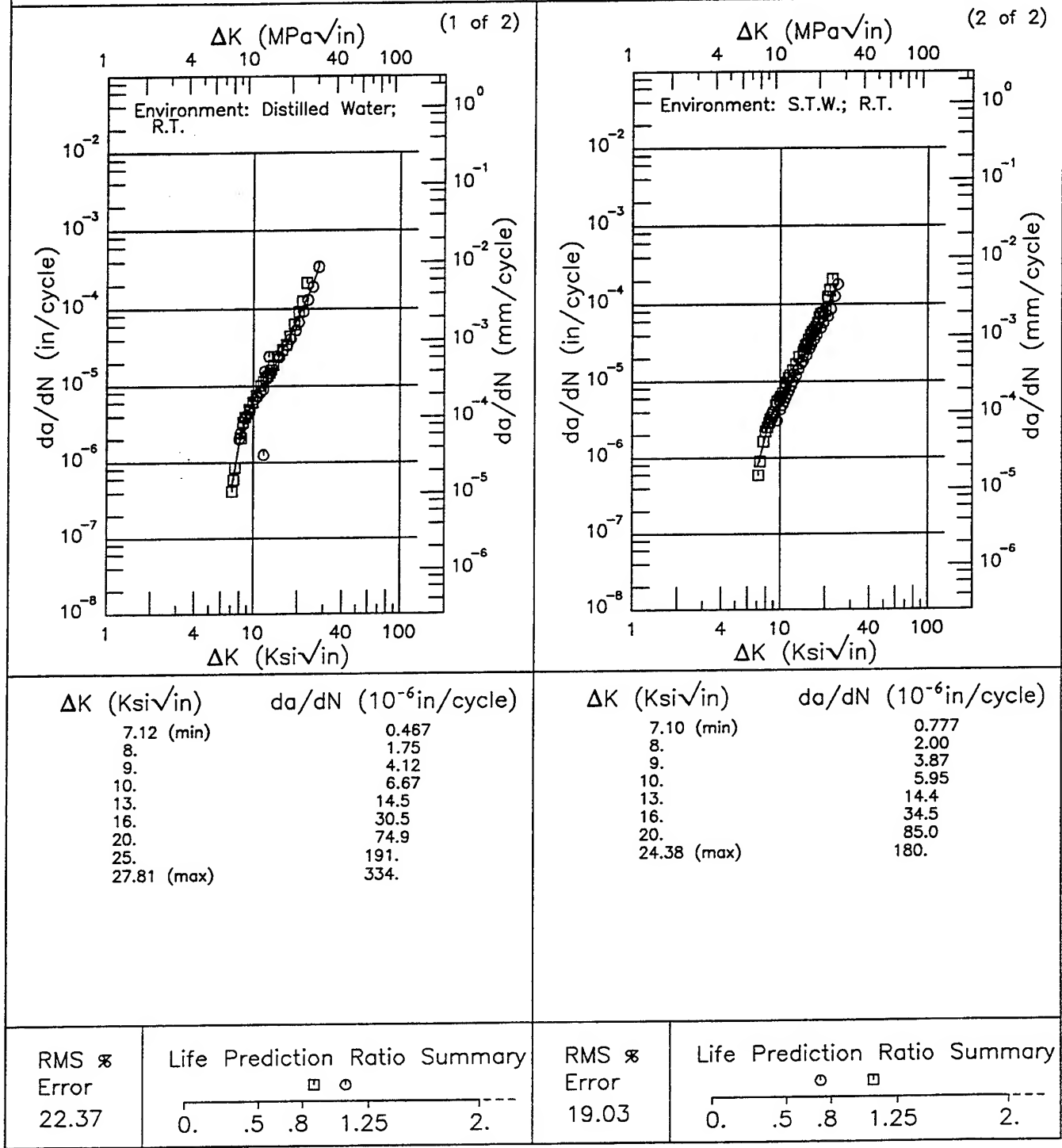


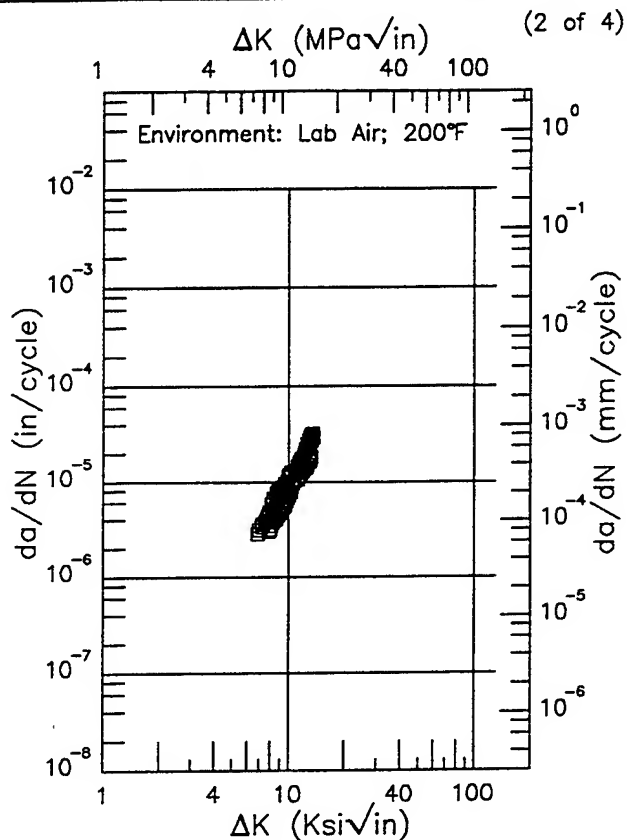
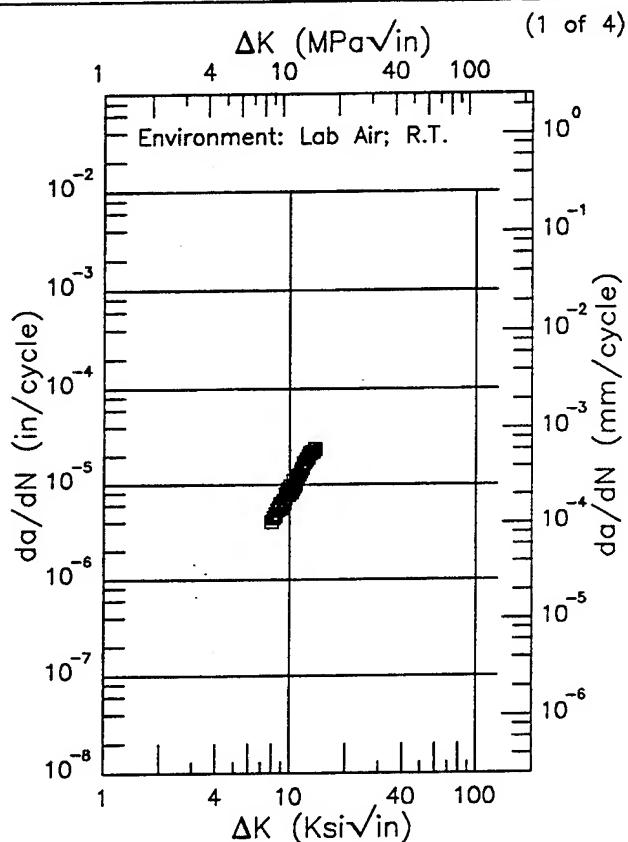
Figure 7.5.3.1.32
 7-236

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E | 2024 |

Condition/Ht: T351
 Form: 0.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.1
 Frequency: 20 Hz

Yield Strength: 51.5 ksi
 Ult. Strength: 65.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 2 in.
 Ref: UD009



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
7.96 (min)	4.02
8.	4.07
9.	6.21
10.	8.51
13.	21.4
13.55 (max)	23.0

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.84 (min)	2.90
7.	3.10
8.	4.36
9.	6.04
10.	8.77
13.	21.9
13.54 (max)	28.0

RMS %
 Error
 6.32

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error
 21.69

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.5.3.1.33

Condition/Ht: T351
 Form: 0.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.1
 Frequency: 20 Hz

Yield Strength: 51.5 ksi
 Ult. Strength: 65.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 2 in.
 Ref: UD009

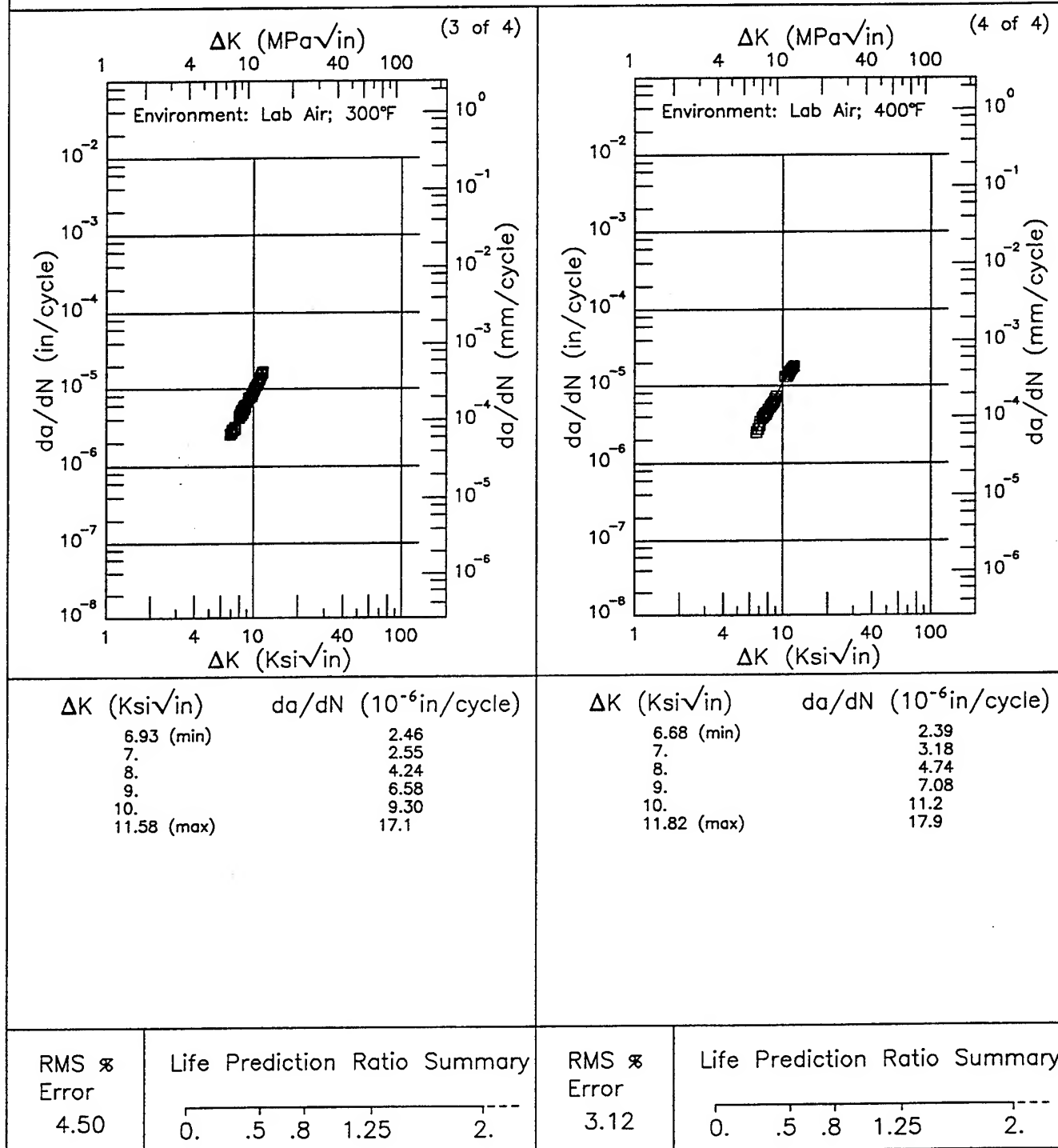
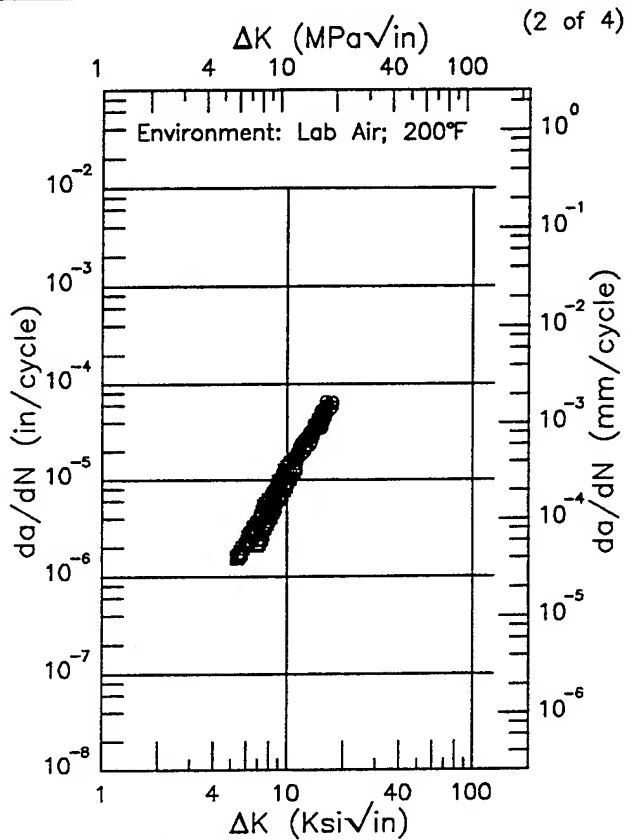
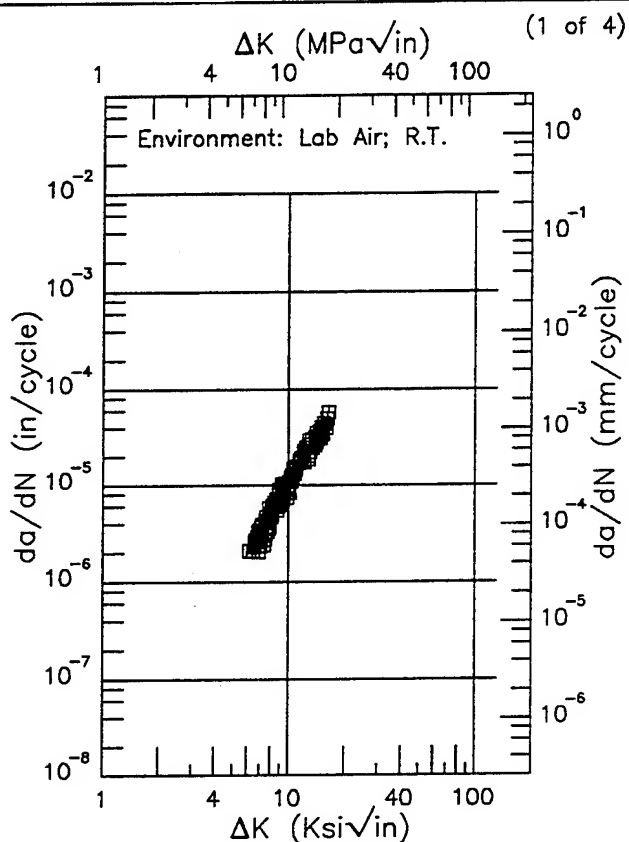


Figure 7.5.3.1.33 (Concluded)

E | 2024 |
 Condition/Ht: T351
 Form: 0.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.3
 Frequency: 20 Hz

Yield Strength: 51.5 ksi
 Ult. Strength: 65.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 2 in.
 Ref: UD009



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.16 (min)	2.09
7.	2.79
8.	4.63
9.	7.34
10.	10.5
13.	25.0
16.	47.0
16.29 (max)	53.2

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.35 (min)	1.54
6.	2.19
7.	3.24
8.	4.70
9.	7.21
10.	11.1
13.	26.1
16.	52.8
17.32 (max)	56.3

RMS \times
 Error
 14.91

Life Prediction Ratio Summary

 0. .5 .8 1.25 2.

RMS \times
 Error
 16.71

Life Prediction Ratio Summary

 0. .5 .8 1.25 2.

Figure 7.5.3.1.34

Condition/Ht: T351
 Form: 0.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.3
 Frequency: 20 Hz

Yield Strength: 51.5 ksi
 Ult. Strength: 65.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 2 in.
 Ref: UD009

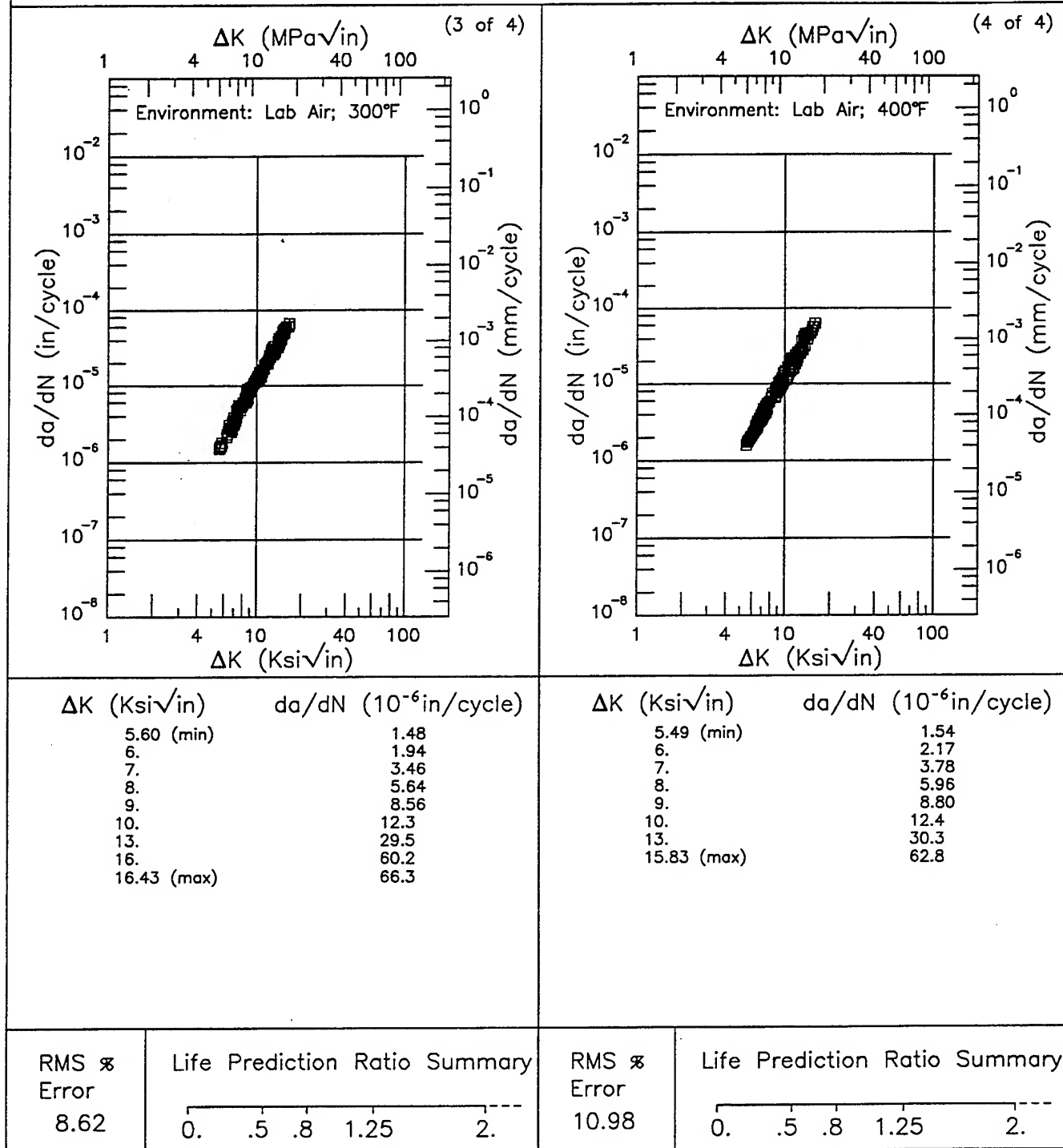
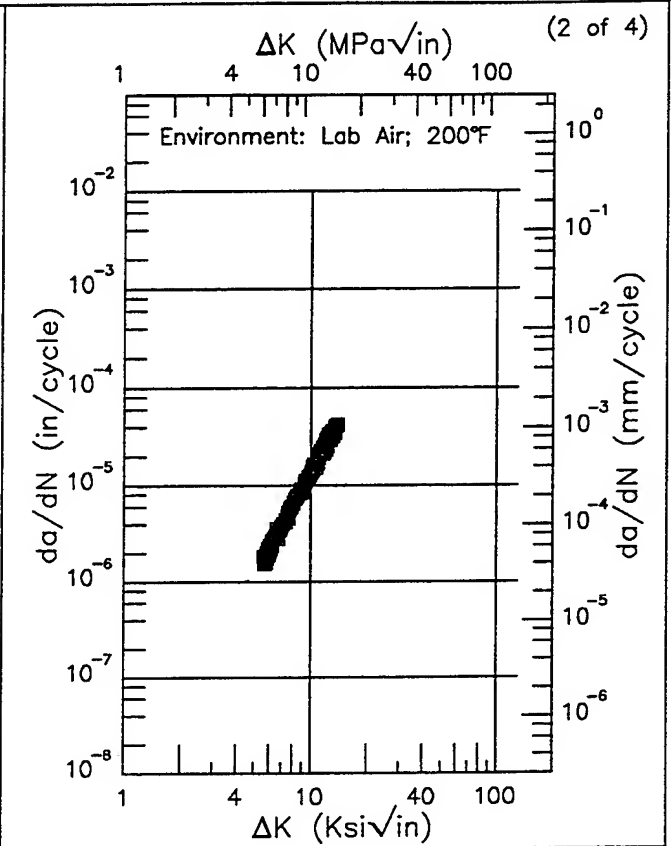
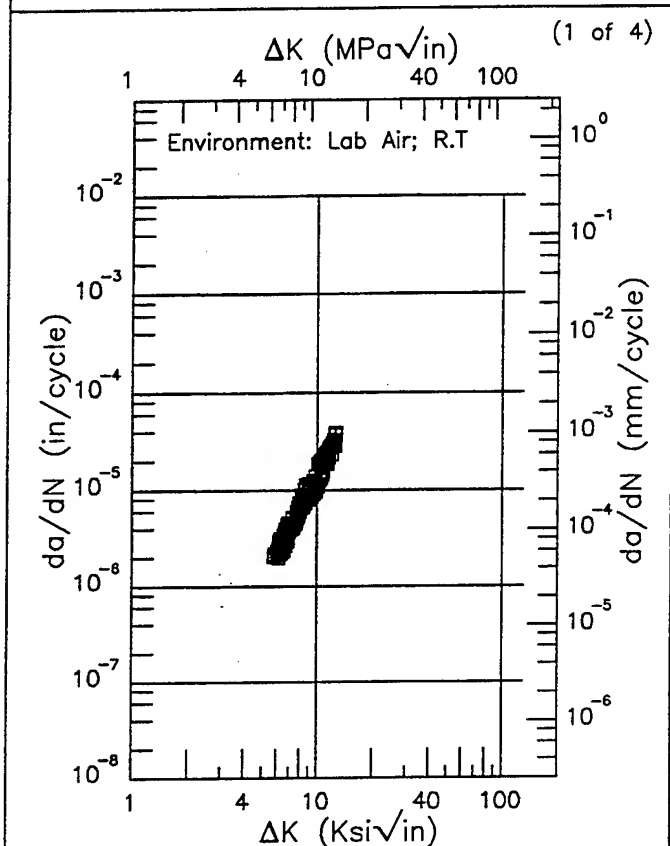


Figure 7.5.3.1.34 (Concluded)

E | 2024 |

Condition/Ht: T351
 Form: 0.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.5
 Frequency: 20 Hz

Yield Strength: 51.5 ksi
 Ult. Strength: 65.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 2 in.
 Ref: UD009



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.77 (min)	1.93
6.	2.25
7.	3.94
8.	6.13
9.	9.07
10.	13.2
12.59 (max)	34.9

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.60 (min)	1.57
6.	2.09
7.	3.80
8.	6.14
9.	9.25
10.	13.3
13.	34.0
13.83 (max)	40.4

RMS % Error	Life Prediction Ratio Summary
15.68	

RMS % Error	Life Prediction Ratio Summary
6.66	

Figure 7.5.3.1.35

Condition/Ht: T351
 Form: 0.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.5
 Frequency: 20 Hz

Yield Strength: 51.5 ksi
 Ult. Strength: 65.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 2 in.
 Ref: UD009

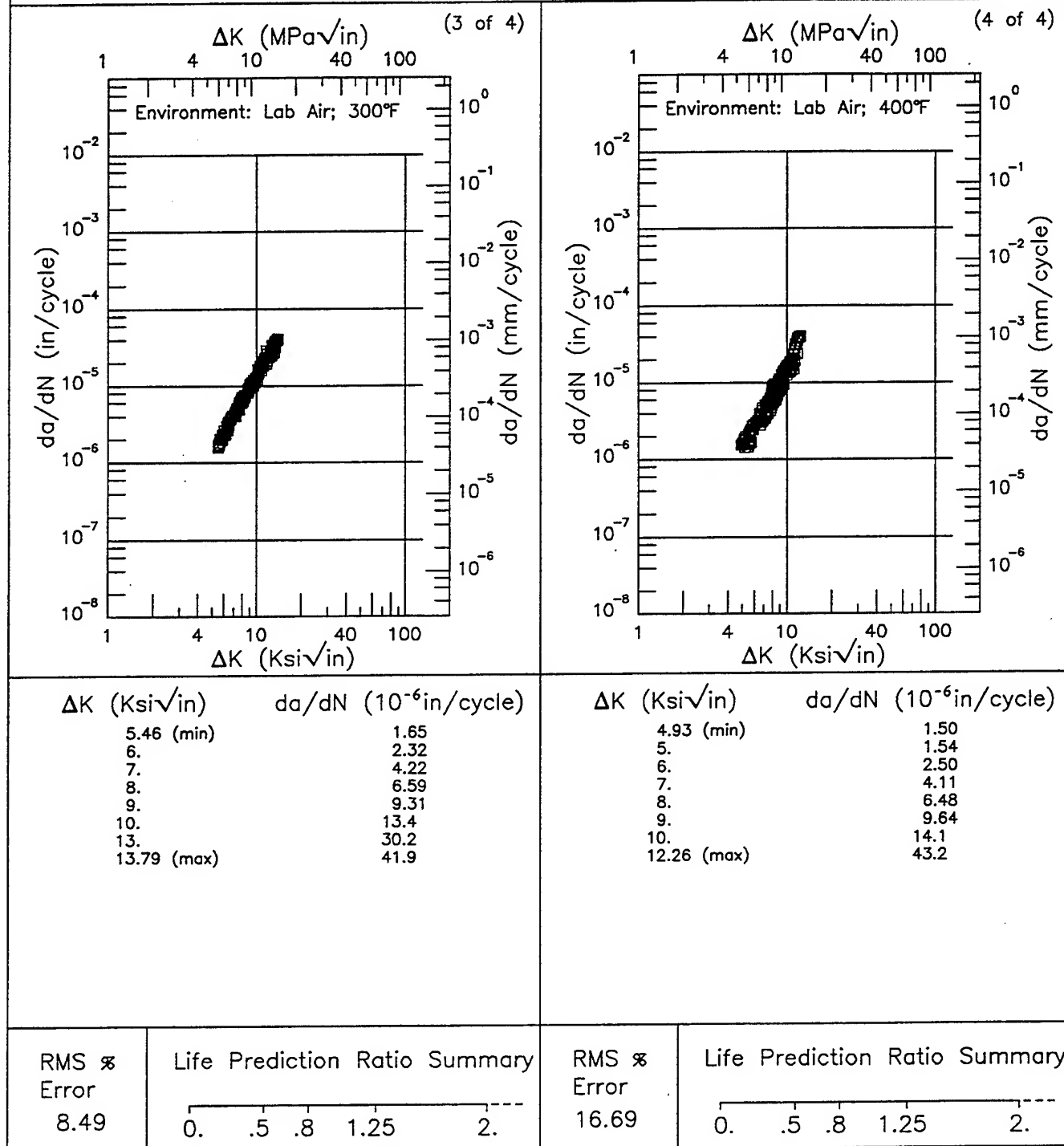
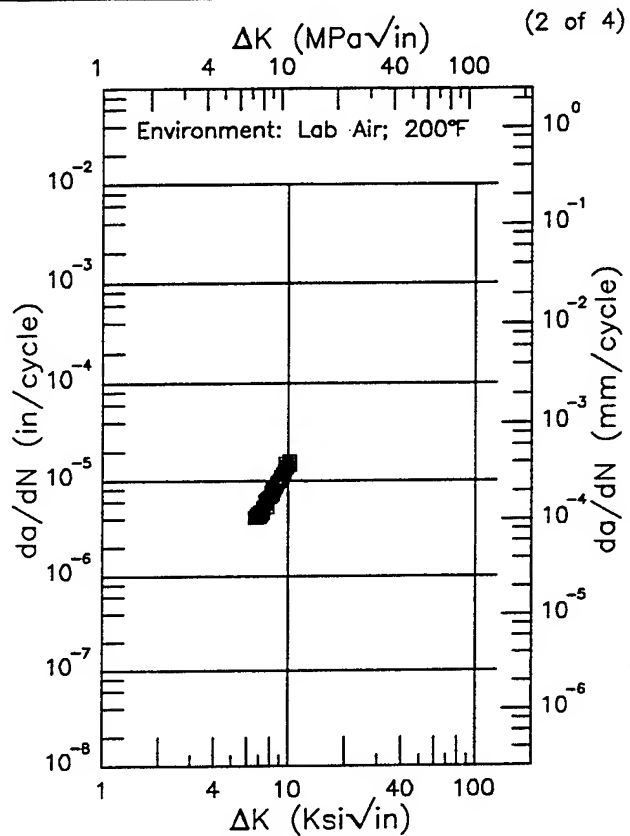
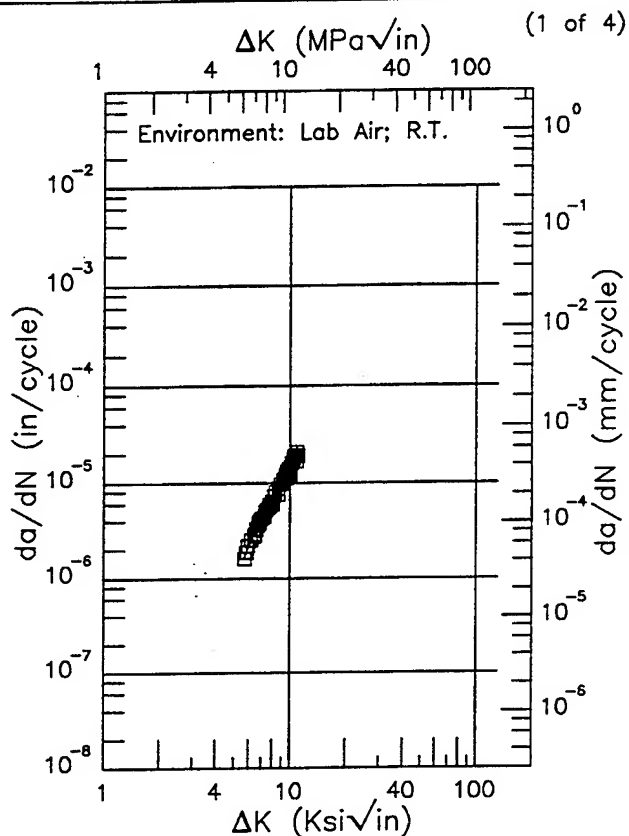


Figure 7.5.3.1.35 (Concluded)

E | 2024 |

Condition/Ht: T351
Form: 0.5 in. Plate
Specimen Type: CT
Orientation: L-T
Stress Ratio: 0.6
Frequency: 20 Hz

Yield Strength: 51.5 ksi
Ult. Strength: 65.9 ksi
Specimen Thk: 0.5 in.
Specimen Width: 2 in.
Ref: UD009



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.67 (min)	1.63
6.	2.19
7.	4.12
8.	6.54
9.	9.92
10.	14.7
10.96 (max)	19.5

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.63 (min)	4.22
7.	4.30
8.	6.90
9.	10.0
10.	14.4
10.11 (max)	14.7

RMS \times
Error
6.32

Life Prediction Ratio Summary
0. .5 .8 1.25 2. ---

RMS \times
Error
5.17

Life Prediction Ratio Summary
0. .5 .8 1.25 2. ---

Figure 7.5.3.1.36

Condition/Ht: T351
 Form: 0.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.6
 Frequency: 20 Hz

Yield Strength: 51.5 ksi
 Ult. Strength: 65.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 2 in.
 Ref: UD009

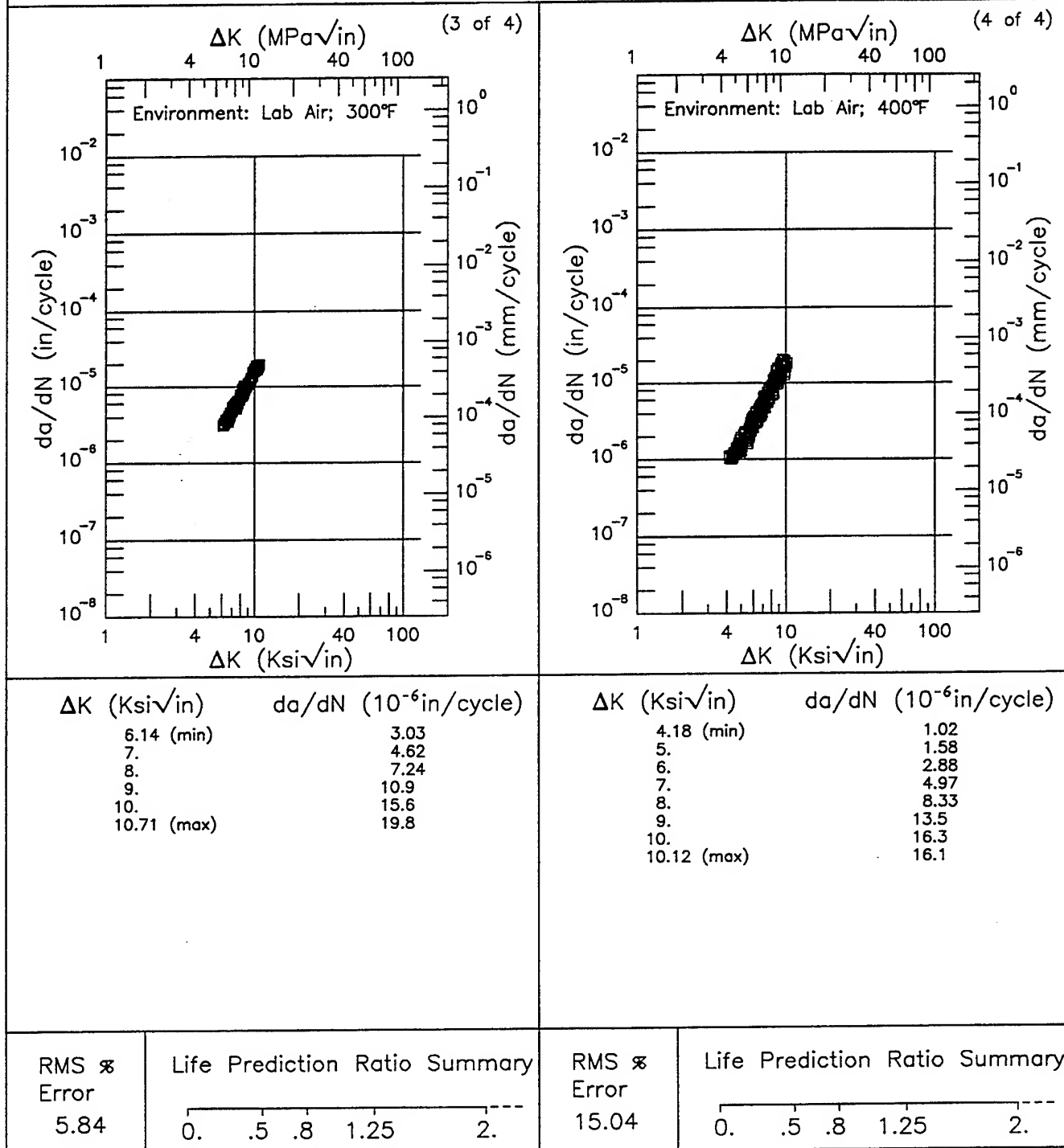


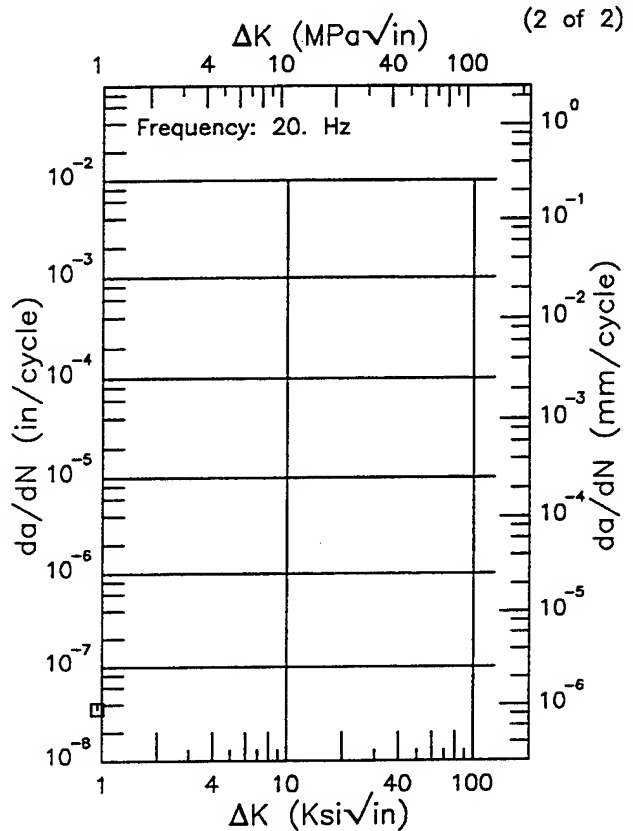
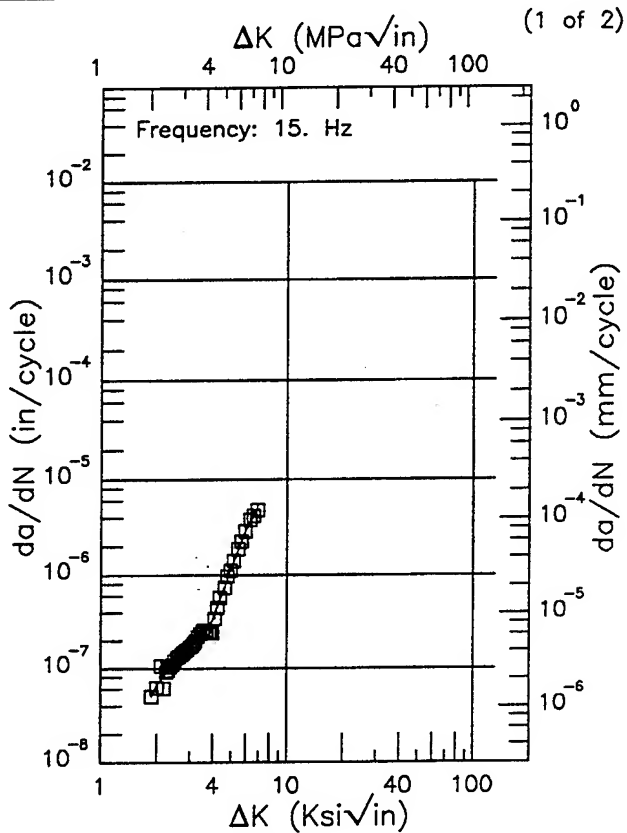
Figure 7.5.3.1.36 (Concluded)

F

2024

Condition/Ht: T351
 Form: 1 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.8
 Environment: LAB AIR; RT

Yield Strength: 54.2 – 57 ksi
 Ult. Strength:
 Specimen Thk: 0.247 – 0.25 in.
 Specimen Width: 2.006 – 2.007 in.
 Ref: DA005

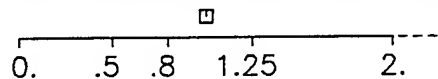


ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
1.87 (min)	0.0506
2.	0.0657
2.5	0.120
3.	0.167
3.5	0.227
4.	0.342
5.	1.19
6.	3.00
6.84 (max)	4.86

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
---------------------	-------------------------------

RMS %
 Error
 10.02

Life Prediction Ratio Summary



RMS %
 Error

Life Prediction Ratio Summary

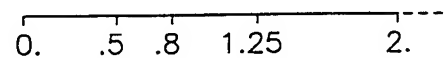


Figure 7.5.3.1.37

Condition/Ht: T351
 Form: 1 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.8
 Frequency: 1 Hz

Yield Strength: 54.3 - 57 ksi
 Ult. Strength: 70 ksi
 Specimen Thk: 0.245 - 0.25 in.
 Specimen Width: 2 - 2.008 in.
 Ref: DA004;DA005

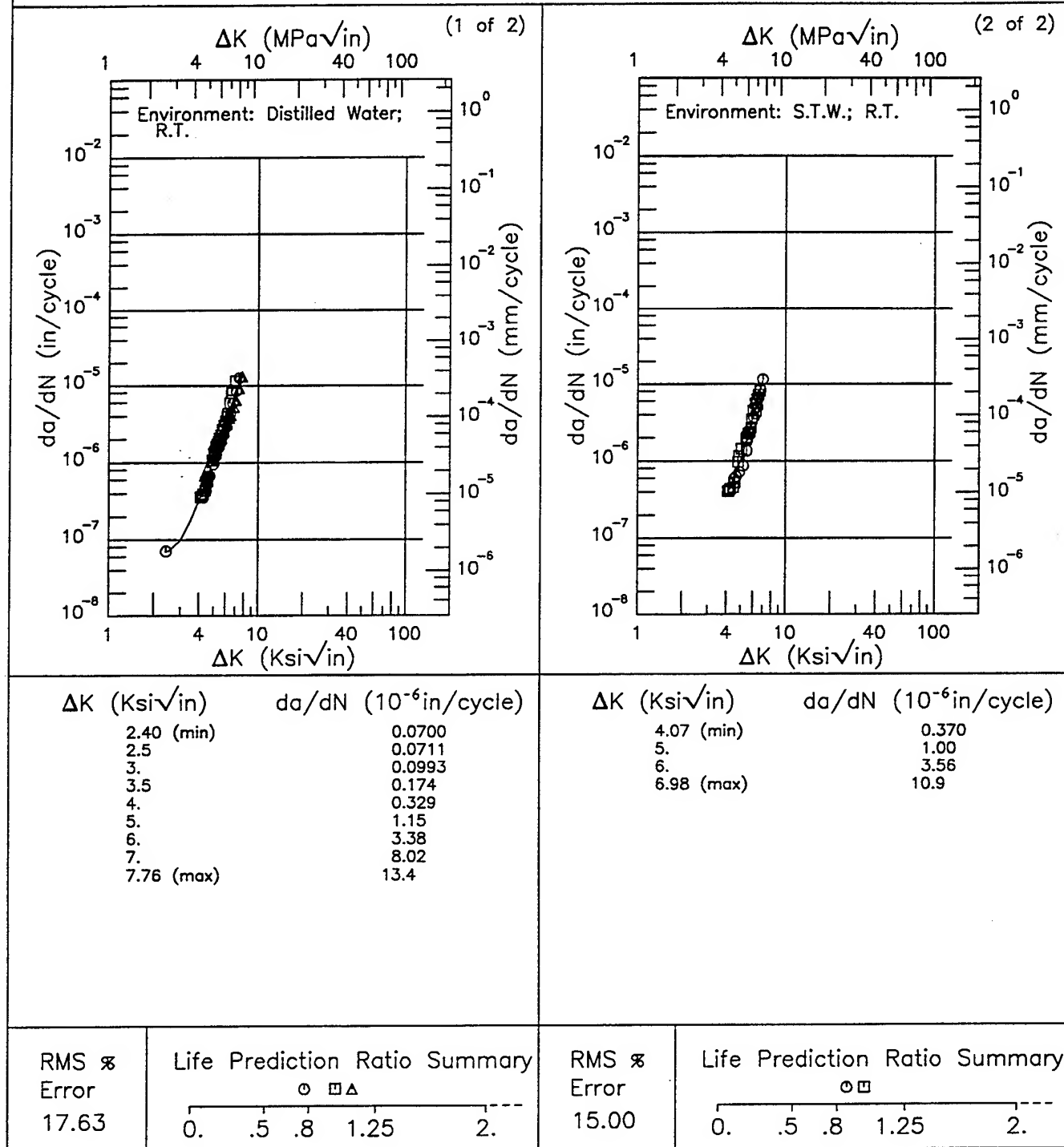


Figure 7.5.3.1.38

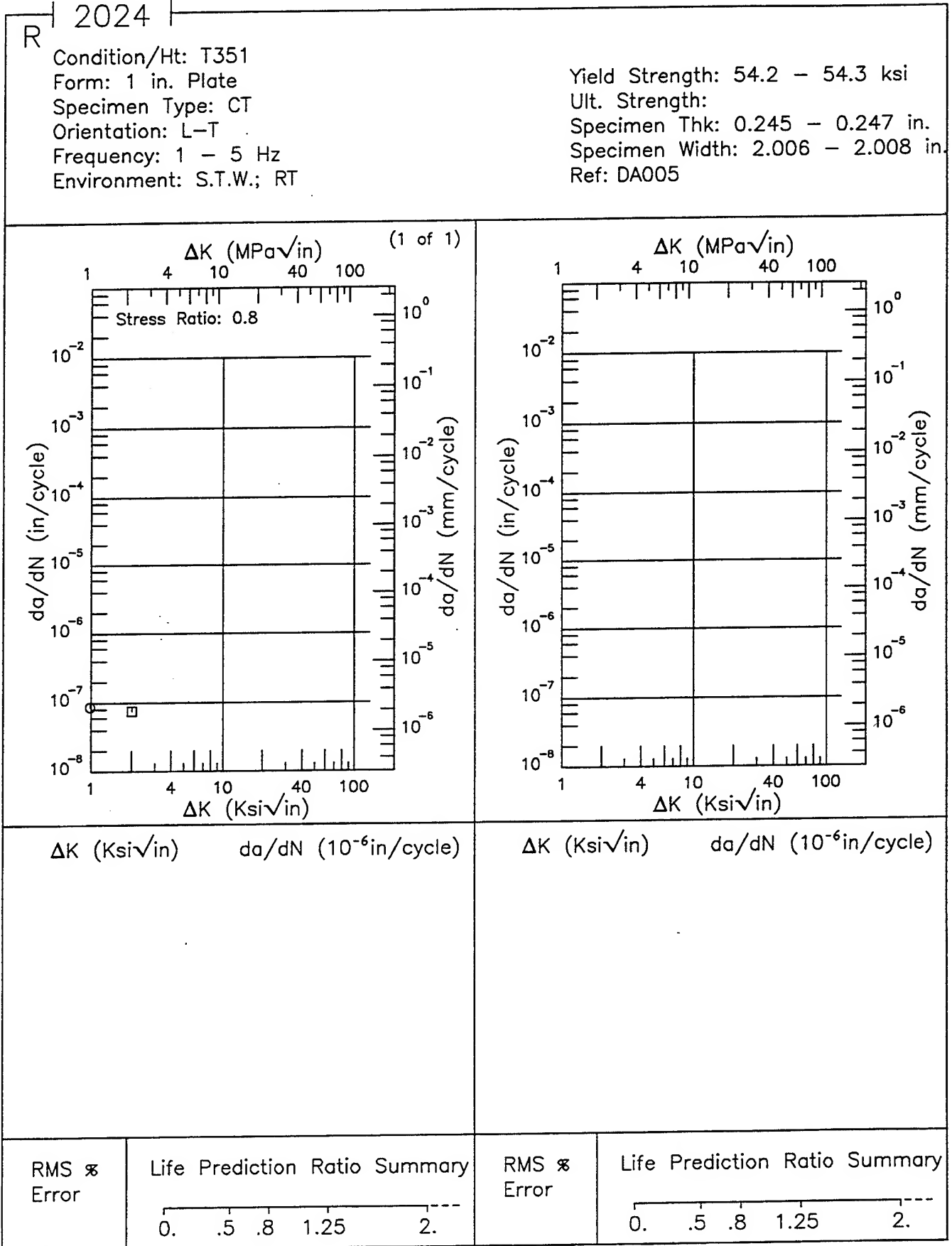


Figure 7.5.3.1.39

Yield Strength: 54.3 ksi
Ult. Strength: .
Specimen Thk: 0.246 in.
Specimen Width: 2.006 in.
Ref: DA005

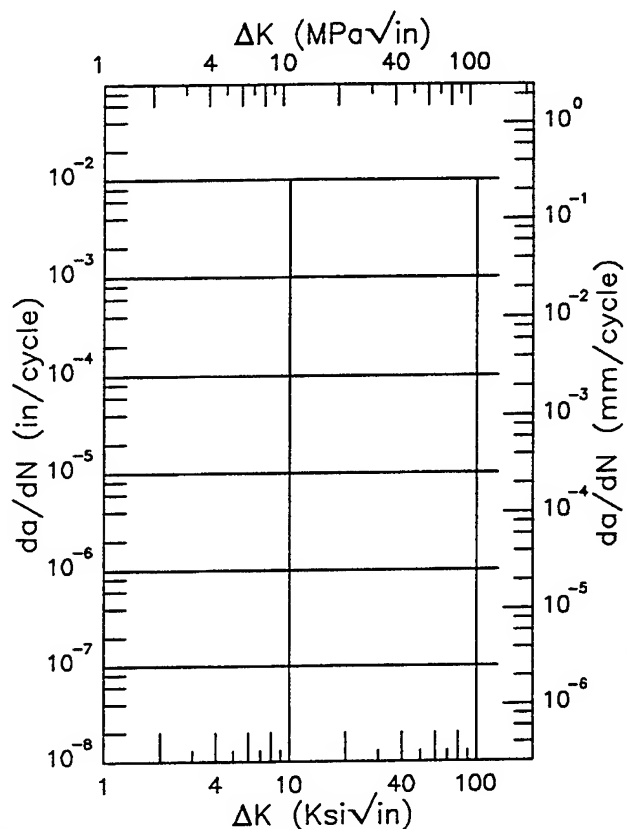
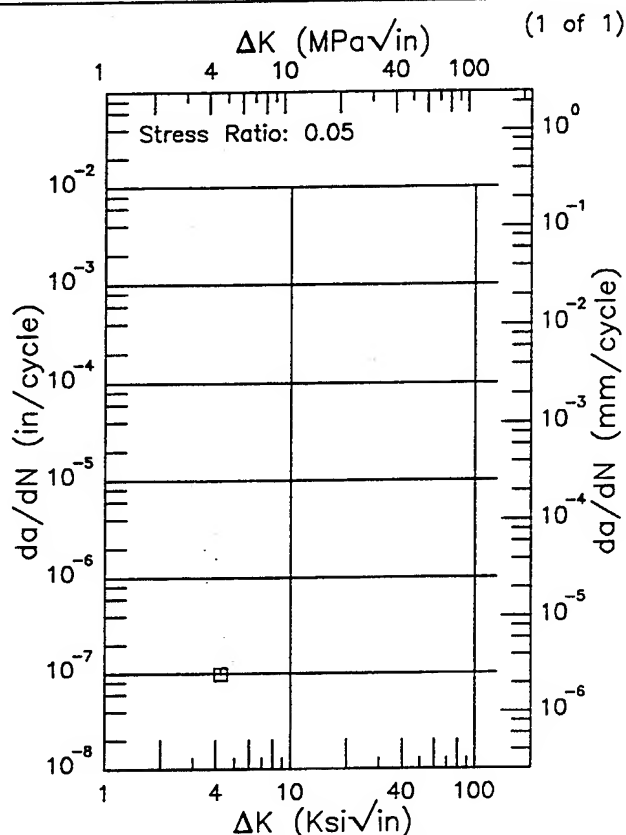


R

2024

Condition/Ht: T351
 Form: 1 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 10 Hz
 Environment: DIST WATER; RT

Yield Strength: 54.3 ksi
 Ult. Strength:
 Specimen Thk: 0.25 in.
 Specimen Width: 2 in.
 Ref: DA005



ΔK (Ksi√in) da/dN (10⁻⁶in/cycle)

ΔK (Ksi√in) da/dN (10⁻⁶in/cycle)

RMS %
Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.-----

RMS %
Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.-----

Figure 7.5.3.1.41

Condition/Ht: T351
 Form: 1 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 - 5 Hz
 Environment: S.T.W.; RT

Yield Strength: 54.3 ksi
 Ult. Strength:
 Specimen Thk: 0.246 in.
 Specimen Width: 2.006 in.
 Ref: DA005

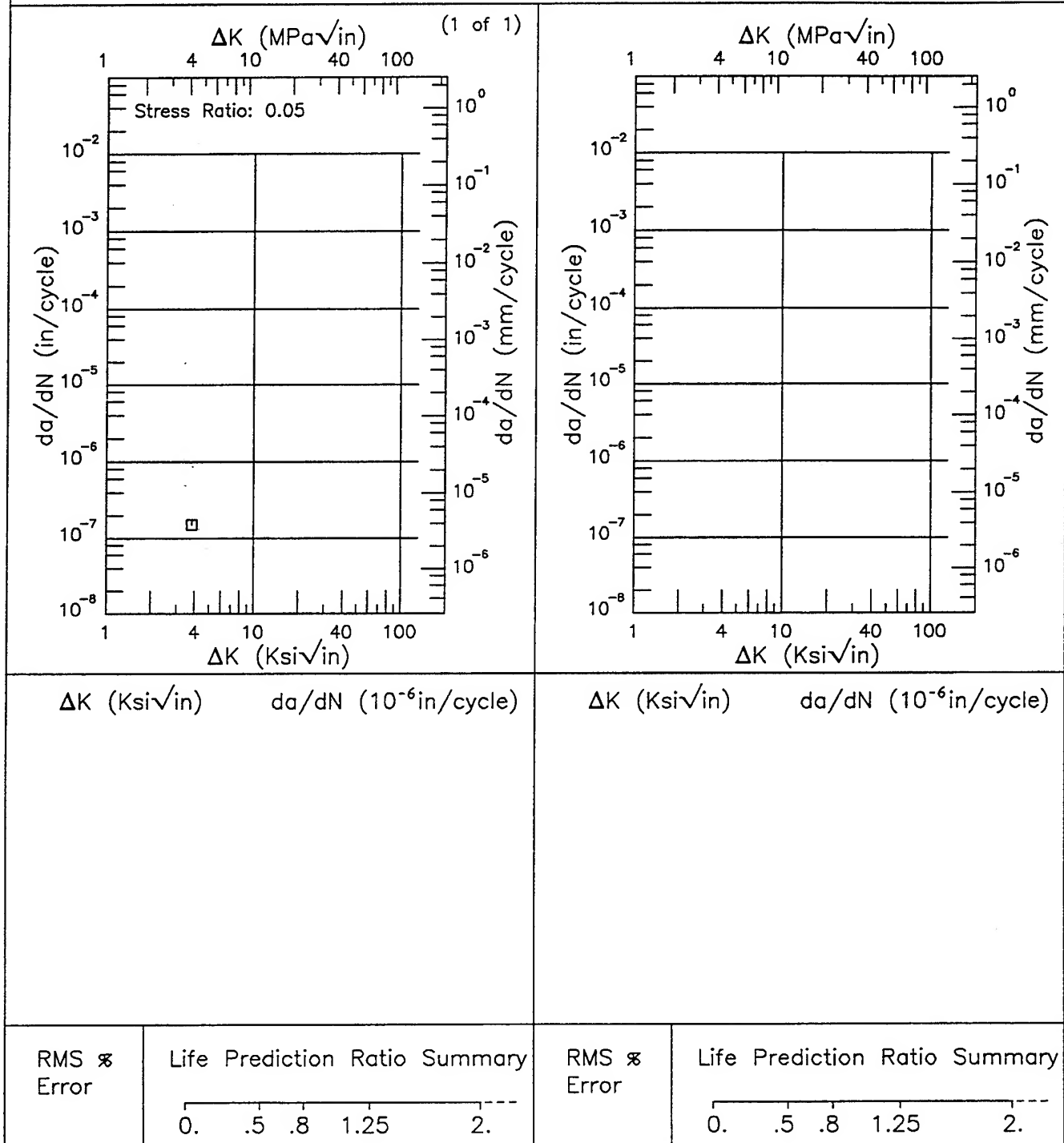


Figure 7.5.3.1.42

R

2024

Condition/Ht: T351
Form: 0.75 in. Plate
Specimen Type: CT
Orientation: L-T
Frequency: 25 Hz
Environment: LAB AIR; RT

Yield Strength: 54.4 ksi
Ult. Strength: 69.3 ksi
Specimen Thk: 0.248 in.
Specimen Width: 2.5 in.
Ref: AL002

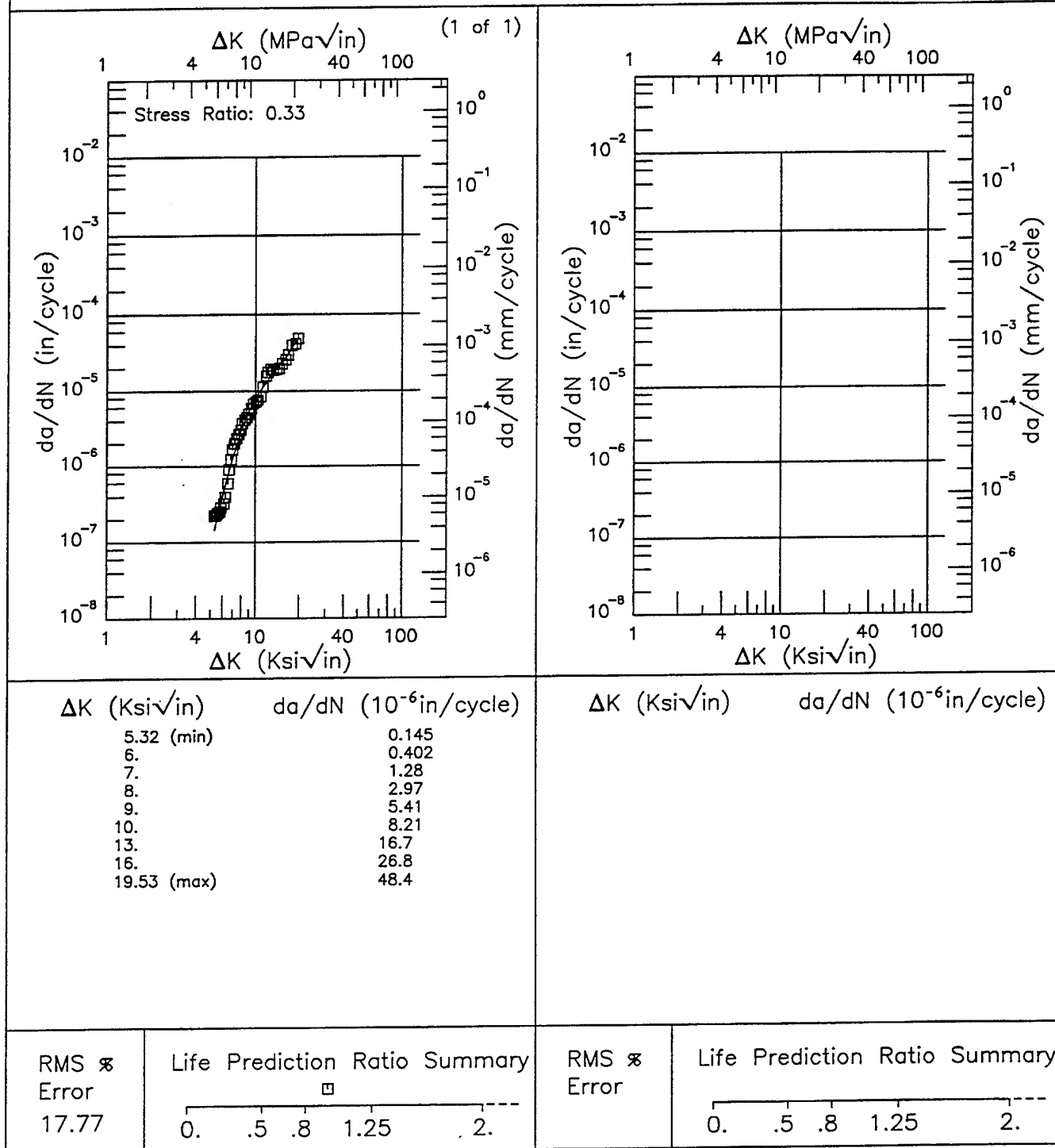
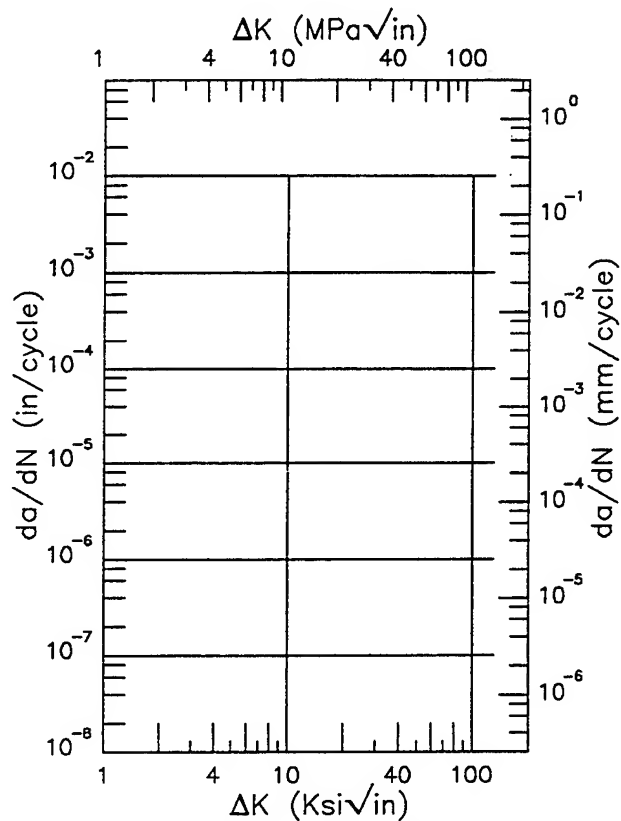
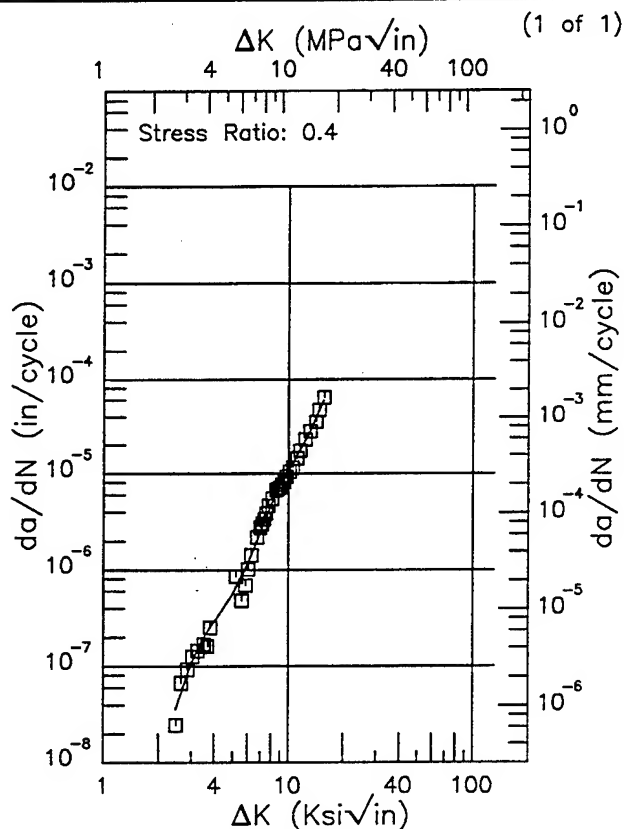


Figure 7.5.3.1.43

Condition/Ht: T351
 Form: 1 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 12 Hz
 Environment: LAB AIR; RT

Yield Strength: 57 ksi
 Ult. Strength:
 Specimen Thk: 0.25 in.
 Specimen Width: 2.01 in.
 Ref: DA005



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
2.47 (min)	0.0361
2.5	0.0391
3.	0.108
3.5	0.196
4.	0.294
5.	0.570
6.	1.16
7.	2.49
8.	4.81
9.	7.80
10.	10.7
13.	26.3
15.52 (max)	60.5

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

RMS %
 Error
 15.63

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.5.3.1.44

R

2024

Condition/Ht: T351
Form: 1 in. Plate
Specimen Type: CT
Orientation: L-T
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 54.2 ksi
Ult. Strength:
Specimen Thk: 0.247 in.
Specimen Width: 2.006 in.
Ref: DA005

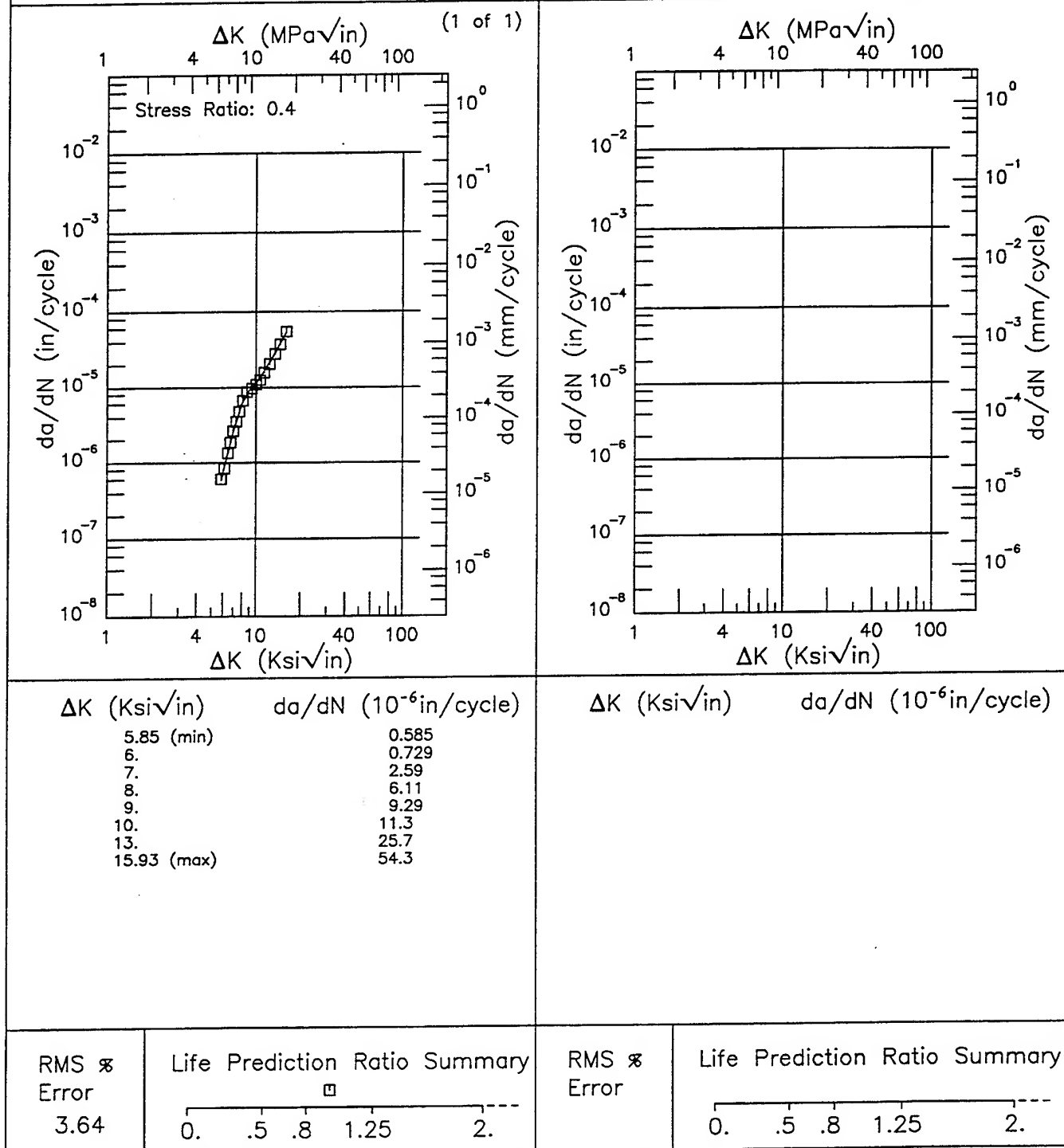


Figure 7.5.3.1.45

Condition/Ht: T351
Form: 1 in. Plate
Specimen Type: CT
Orientation: L-T
Frequency: 20 Hz
Environment: LAB AIR; RT

Yield Strength: 57 ksi
Ult. Strength: 70 ksi
Specimen Thk: 0.499 in.
Specimen Width: 2.003 in.
Ref: DA004

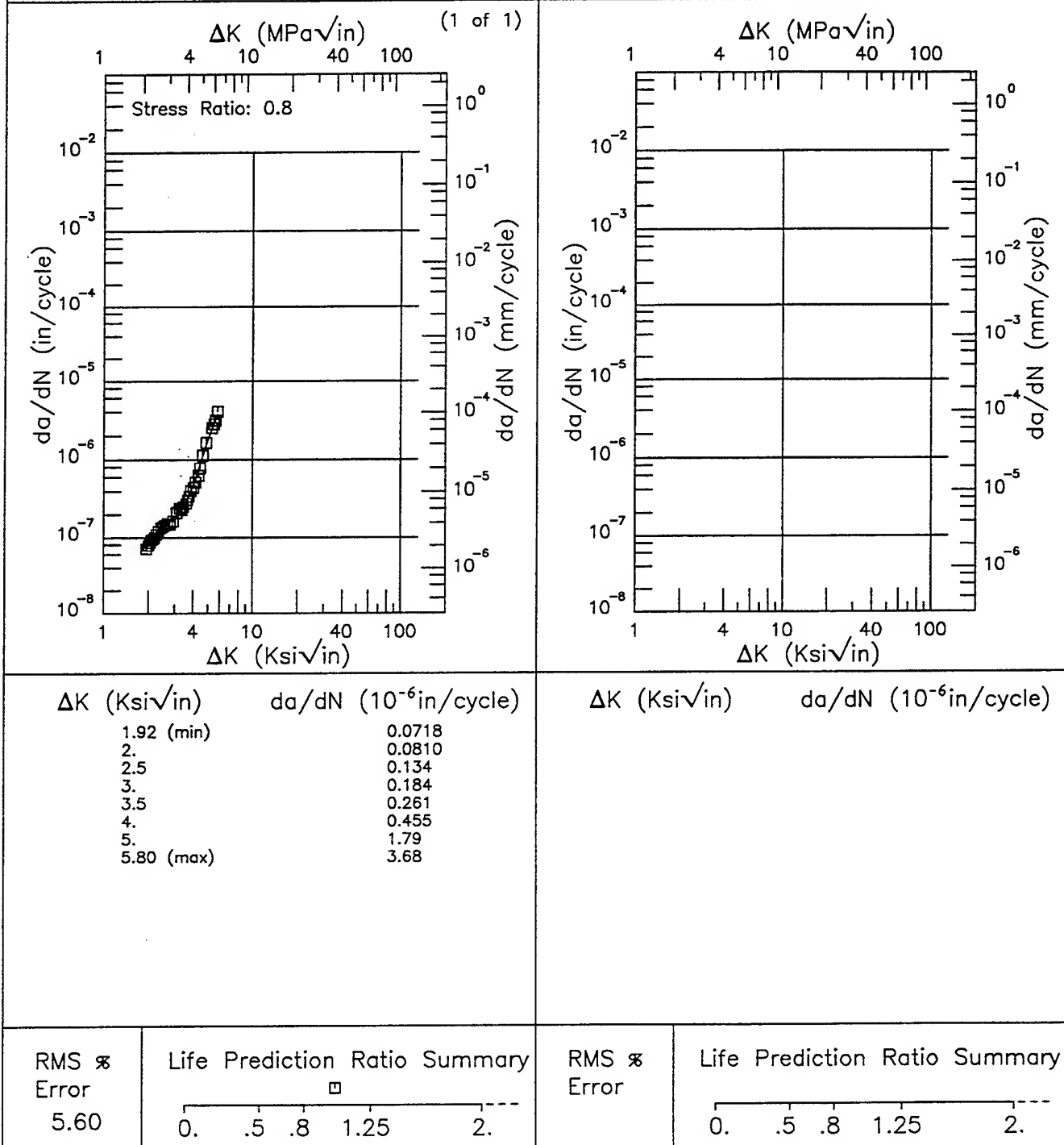


Figure 7.5.3.1.46

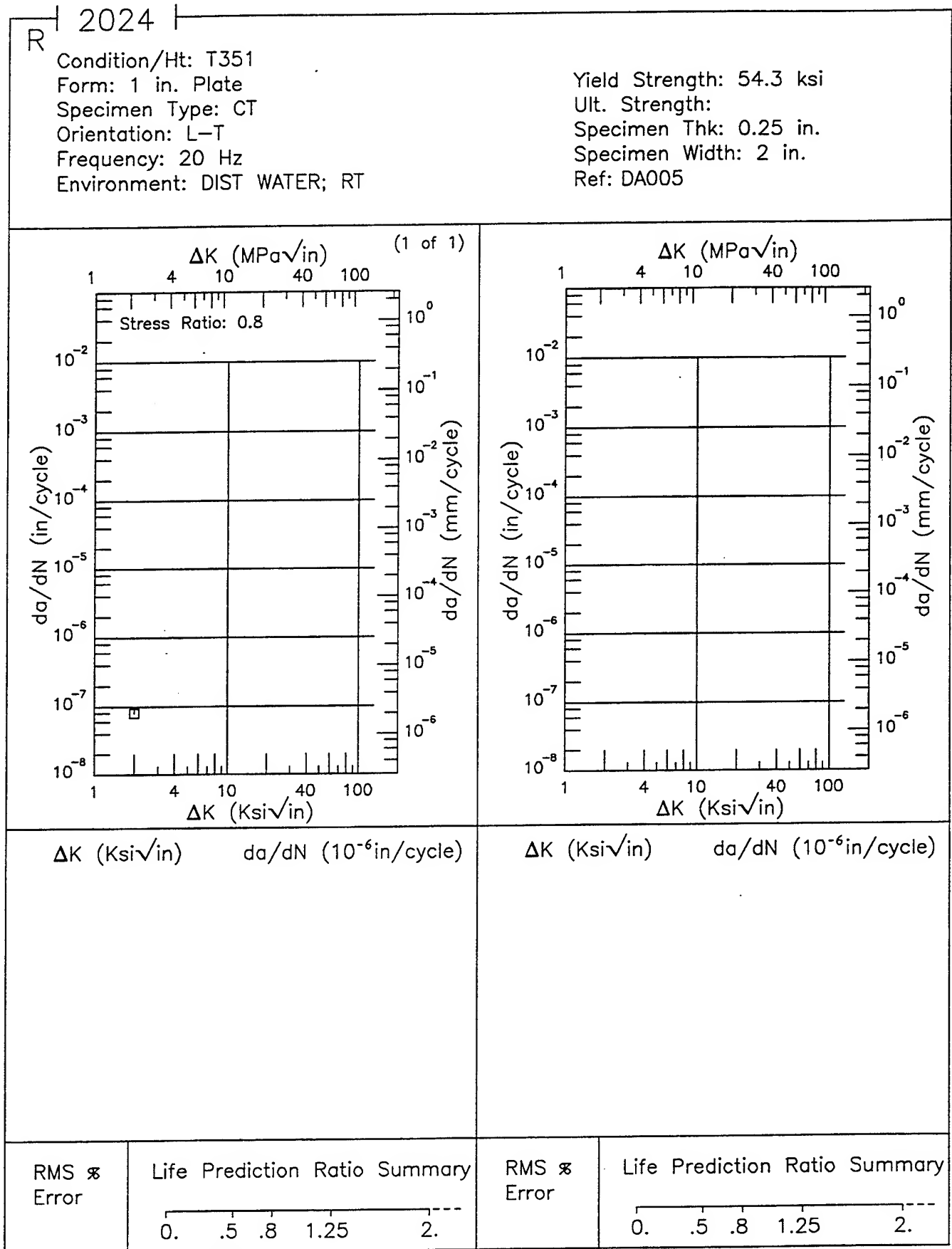


Figure 7.5.3.1.47

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F | 2024 |

Condition/Ht: T351
 Form: 0.25 - 1 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: -1
 Environment: LAB AIR; RT

Yield Strength: 56.9-57.0 ksi
 Ult. Strength: 70 ksi
 Specimen Thk: 0.189-0.260 in.
 Specimen Width: 11.939-12.005 in.
 Ref: DA001;DA004

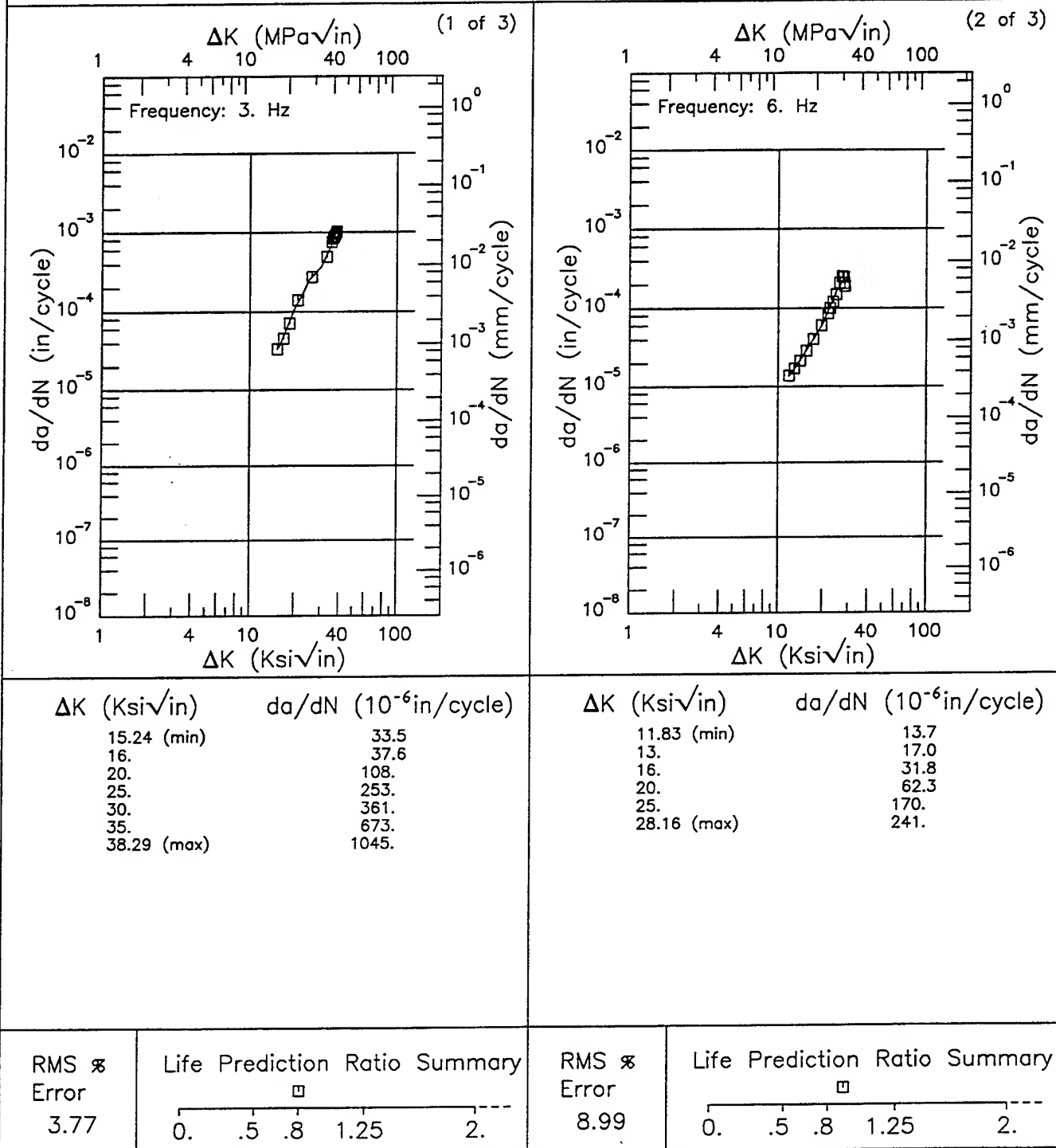


Figure 7.5.3.1.48

Condition/Ht: T351
 Form: 0.25 - 1 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: -1
 Environment: LAB AIR; RT

Yield Strength: 56.9-57.0 ksi
 Ult. Strength: 70. ksi
 Specimen Thk: 0.189-0.260 in.
 Specimen Width: 11.939-12.005 in.
 Ref: DA001;DA004

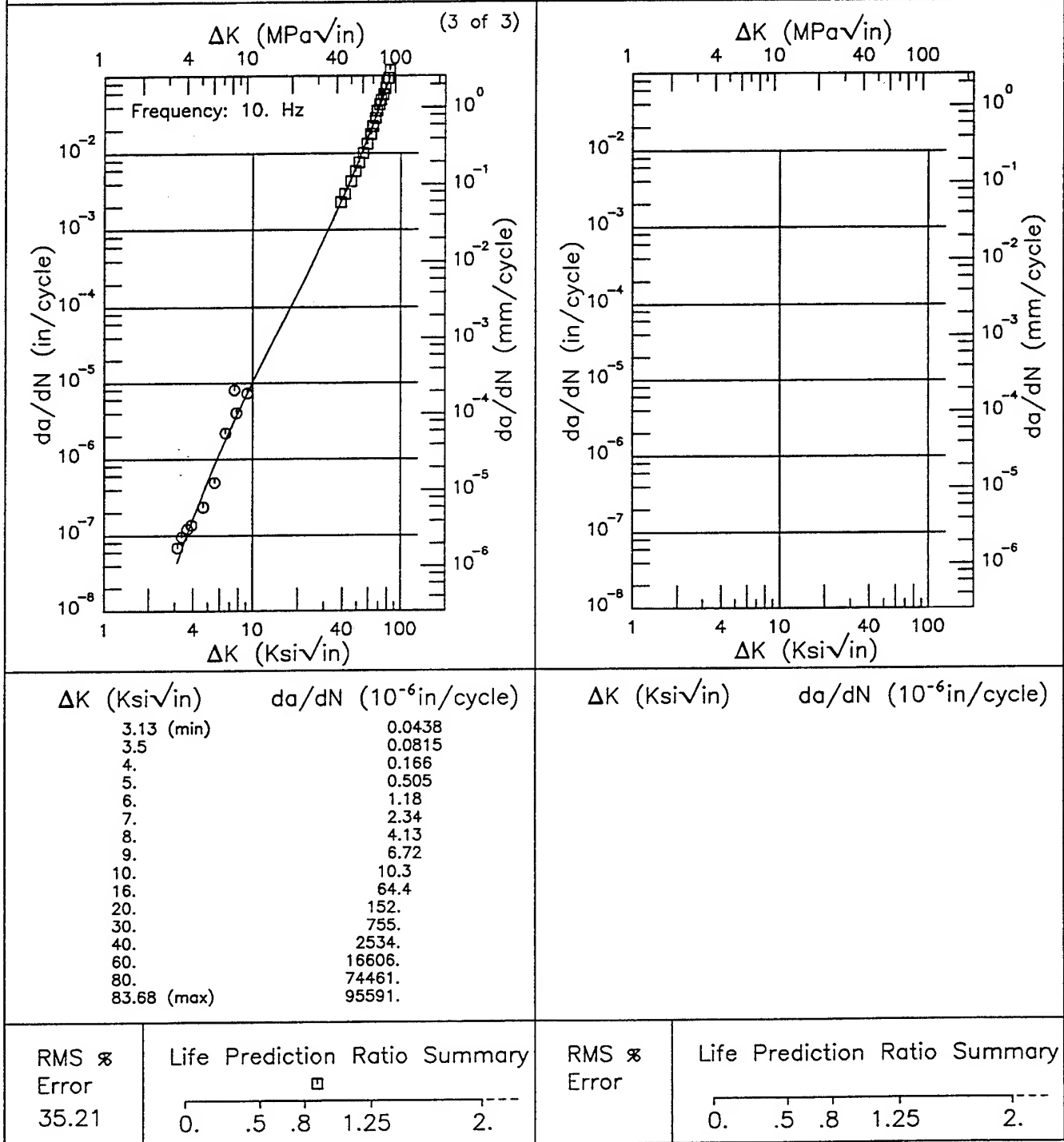


Figure 7.5.3.1.48 (Concluded)

R 2024

Condition/Ht: T351
 Form: 0.25 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 - 6 Hz
 Environment: LAB AIR; RT

Yield Strength: 56.9 ksi
 Ult. Strength:
 Specimen Thk: 0.26 in.
 Specimen Width: 12.007 in.
 Ref: DA001

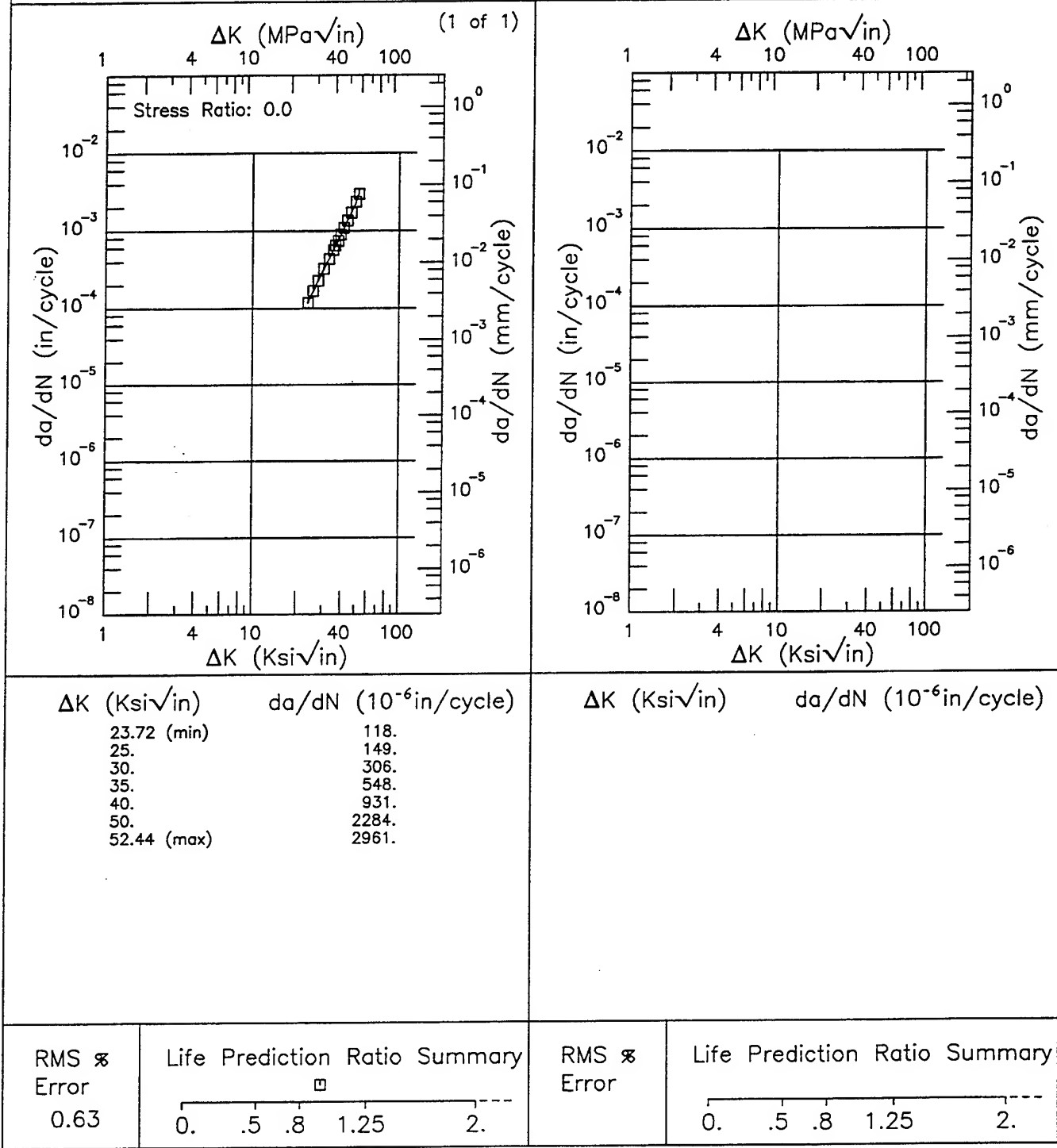


Figure 7.5.3.1.49

Condition/Ht: T351
 Form: 0.25 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 10 - 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 56.9 ksi
 Ult. Strength:
 Specimen Thk: 0.192 in.
 Specimen Width: 4.003 in.
 Ref: DA001

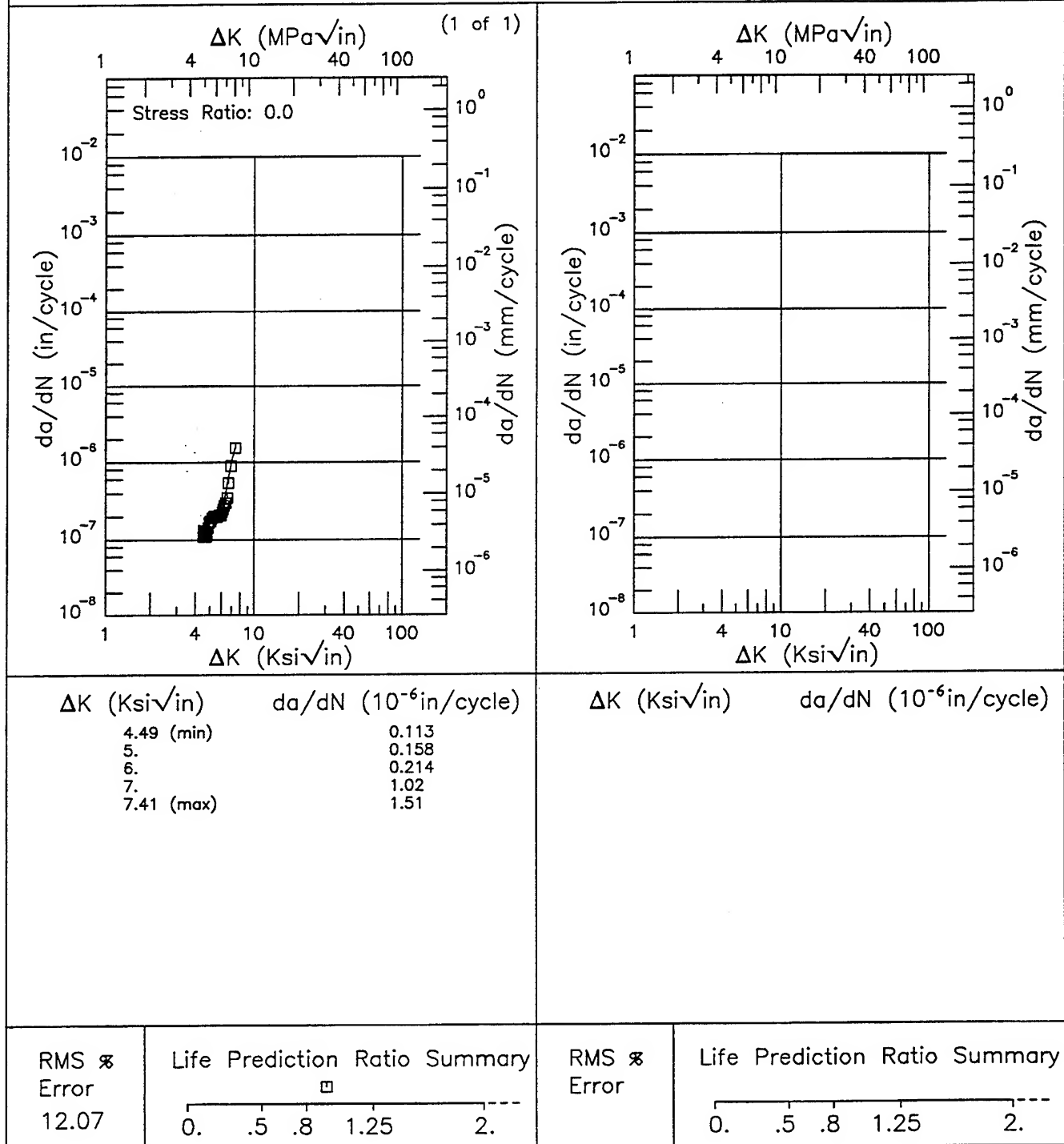


Figure 7.5.3.1.50

F 2024

Condition/Ht: T351
 Form: 1 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: 0.05
 Environment: LAB AIR; RT

Yield Strength: 57 ksi
 Ult. Strength: 70 ksi
 Specimen Thk: 0.494-0.496 in.
 Specimen Width: 11.895-11.937 in.
 Ref: DA004

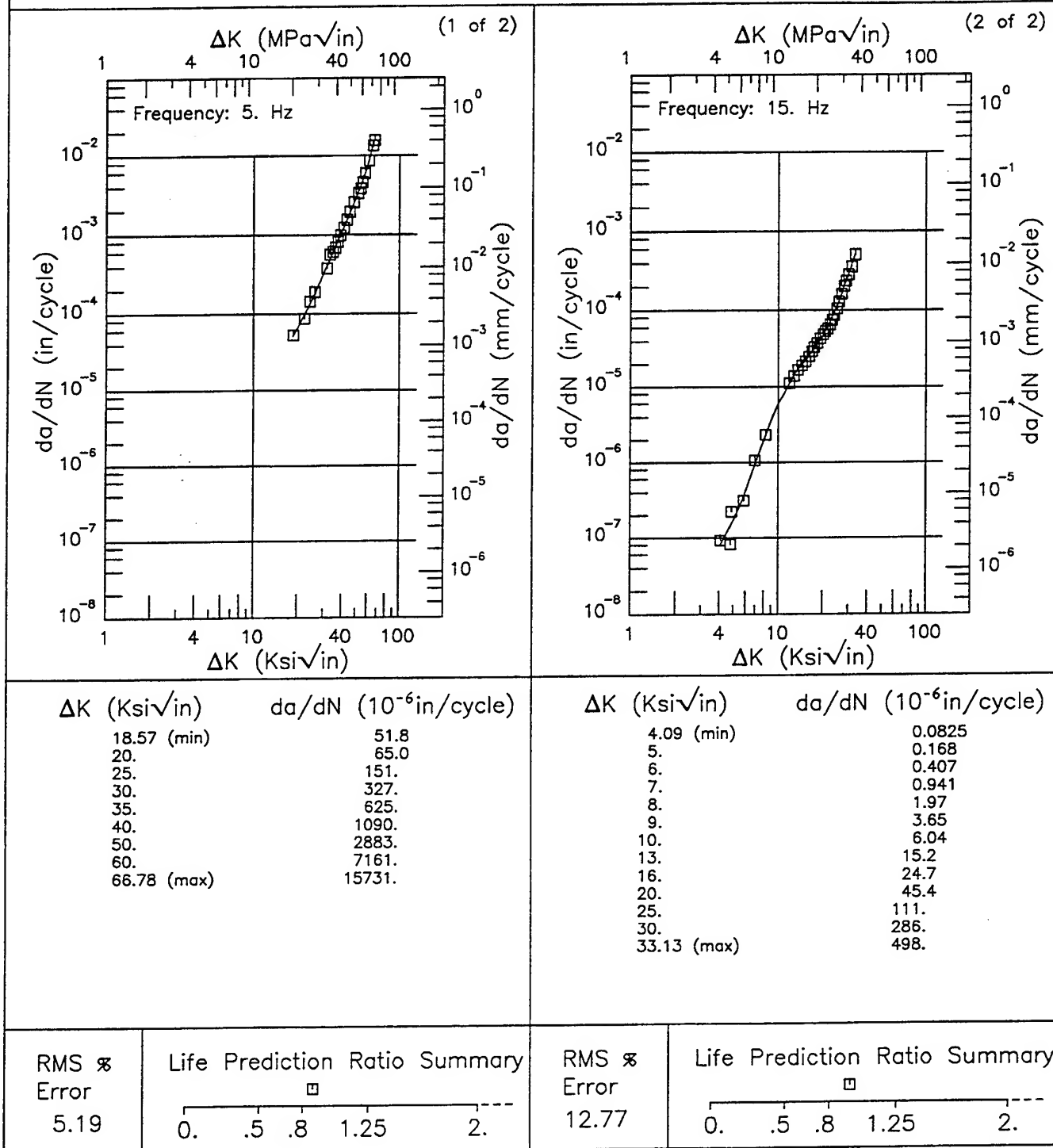


Figure 7.5.3.1.51

Condition/Ht: T351
 Form: 1 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: 0.05
 Environment: LAB AIR; RT

Yield Strength: 54.3–57.0 ksi
 Ult. Strength: 70 ksi
 Specimen Thk: 0.199–0.201 in.
 Specimen Width: 11.895–12.014 in.
 Ref: DA004;DA005

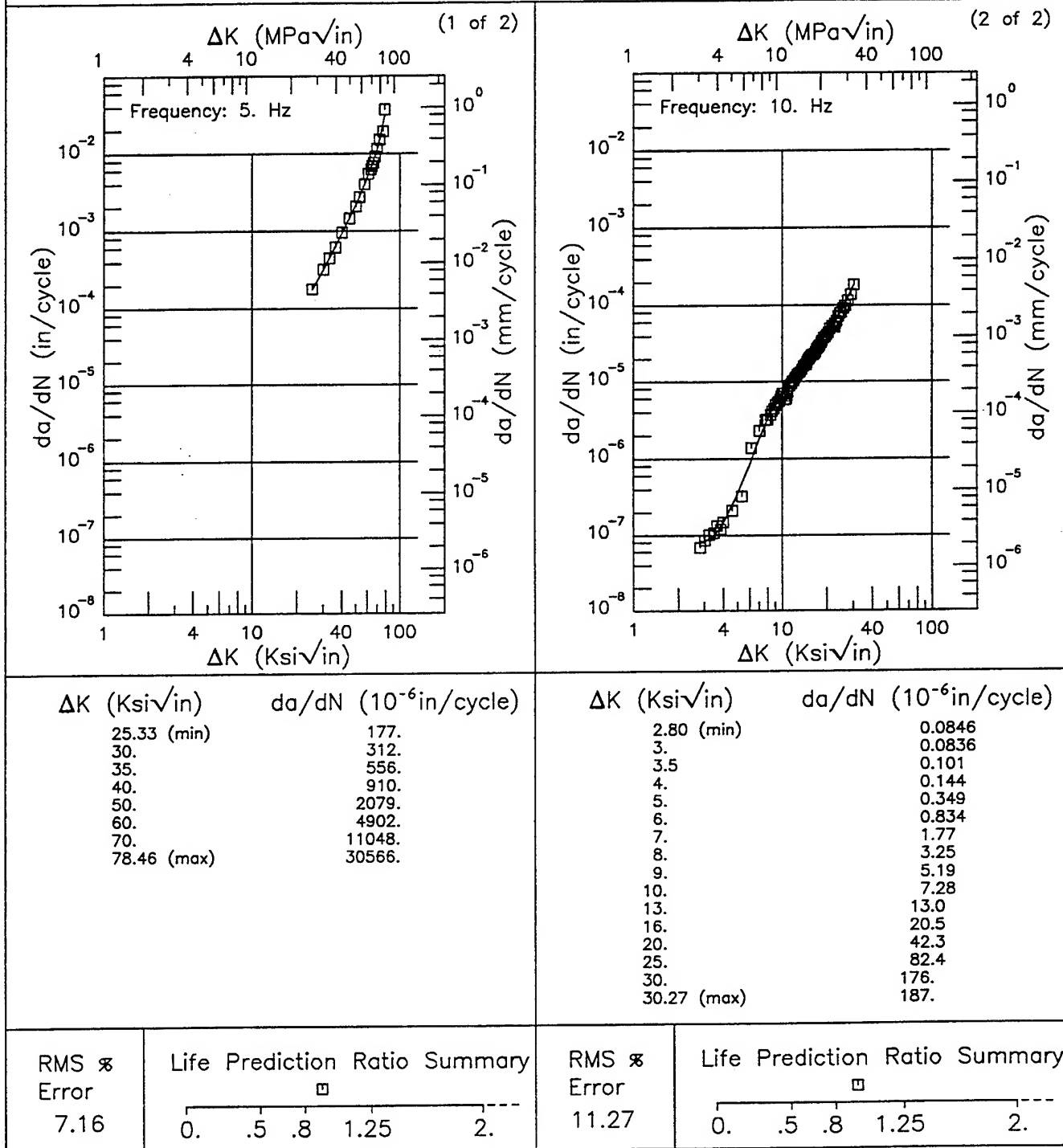


Figure 7.5.3.1.52

F | 2024 |

Condition/Ht: T351
 Form: 0.25 - 1 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: 0.4
 Environment: LAB AIR; RT

Yield Strength: 56.9-57.0 ksi
 Ult. Strength: 70 ksi
 Specimen Thk: 0.197-0.261 in.
 Specimen Width: 11.880-12.007 in.
 Ref: DA001;DA004

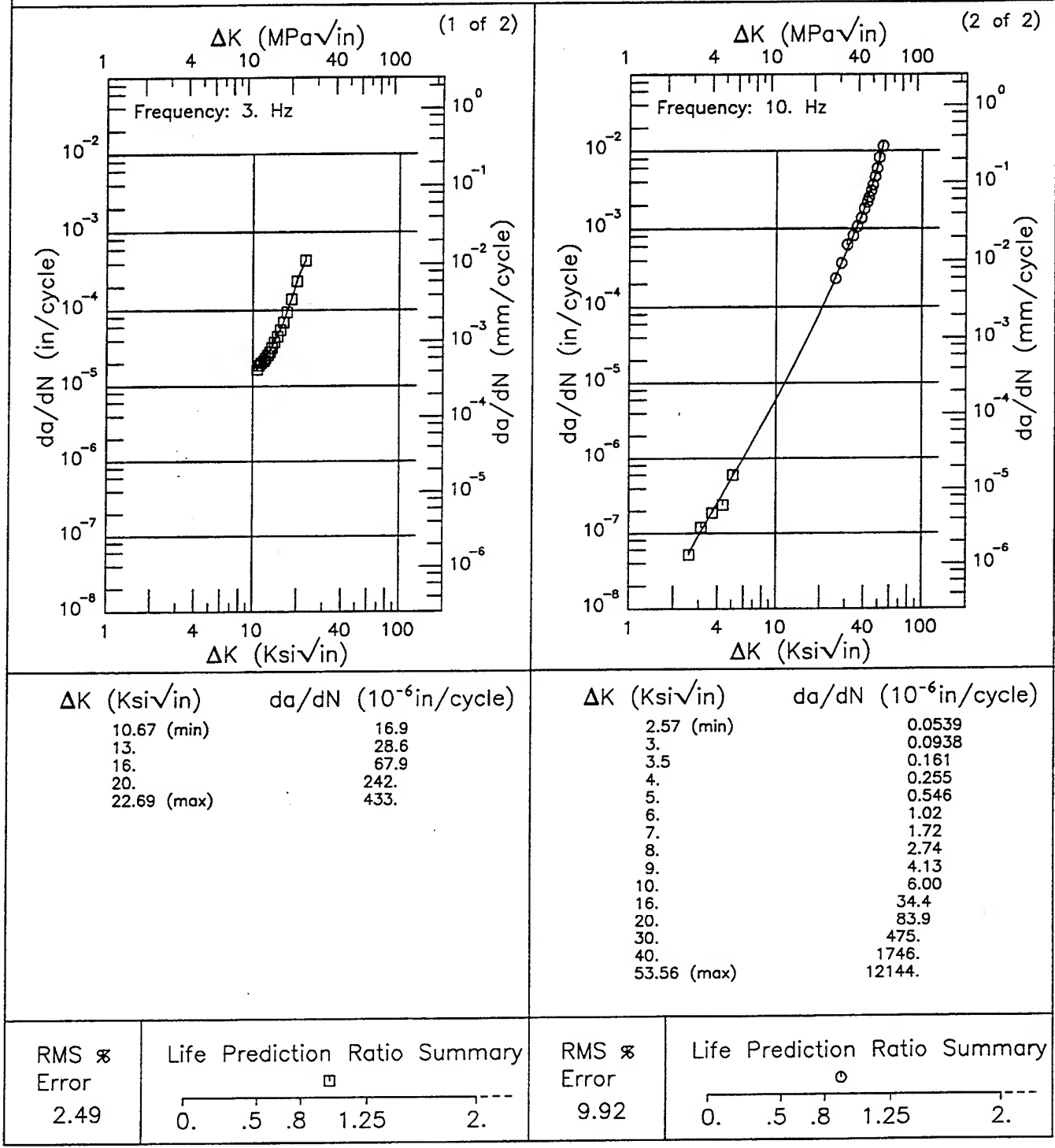


Figure 7.5.3.1.53

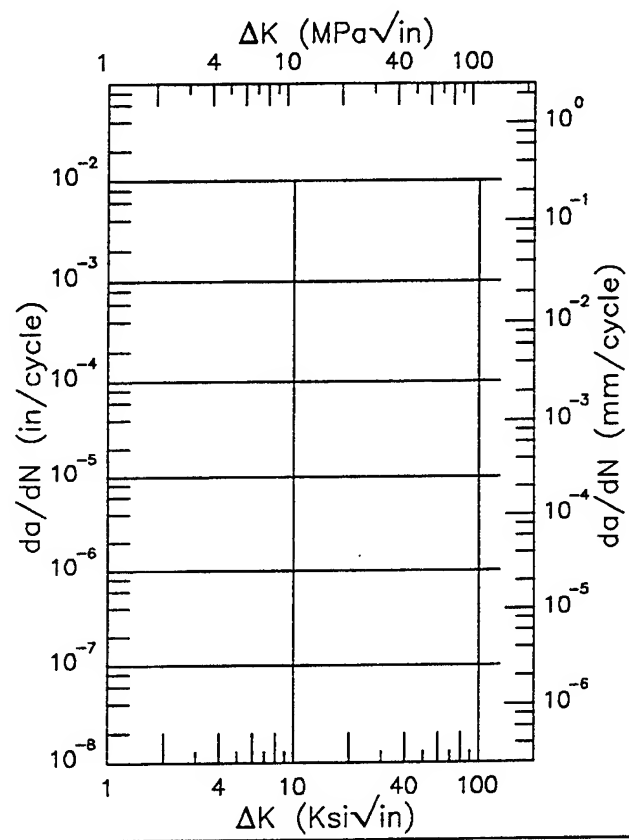
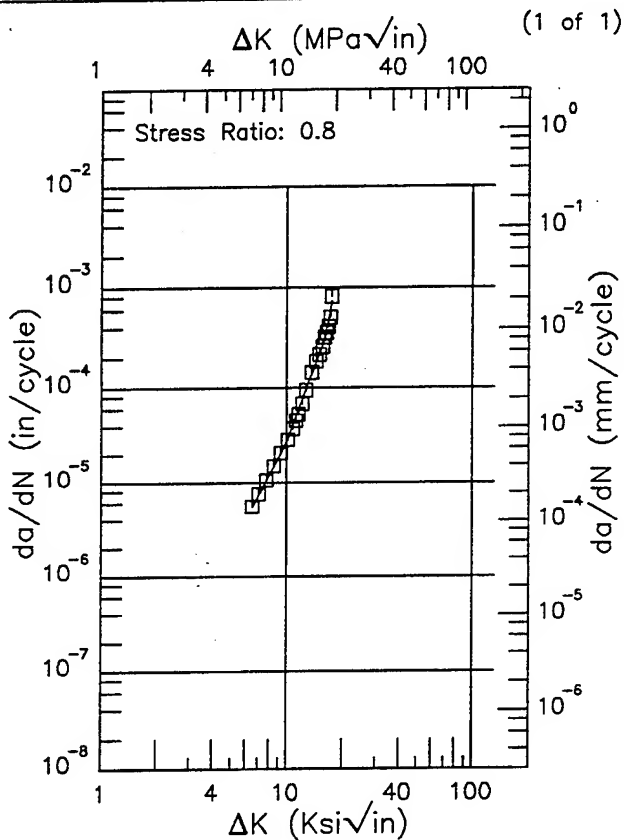
Yield Strength: 56.9 ksi
Ult. Strength:
Specimen Thk: 0.188 - 0.19 in.
Specimen Width: 3.999 - 4.002 in.
Ref: DA001



R | 2024 |

Condition/Ht: T351
 Form: 1 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 5 - 10 Hz
 Environment: LAB AIR; RT

Yield Strength: 57 ksi
 Ult. Strength: 70 ksi
 Specimen Thk: 0.201 in.
 Specimen Width: 11.897 in.
 Ref: DA004



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.51 (min)	5.50
7.	7.26
8.	11.9
9.	18.4
10.	27.7
13.	107.
16.	303.
17.41 (max)	742.

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

RMS %
 Error
 6.37

Life Prediction Ratio Summary

 0. .5 .8 1.25 2.

RMS %
 Error

Life Prediction Ratio Summary

 0. .5 .8 1.25 2.

Figure 7.5.3.1.55

Condition/Ht: T351
 Form: 0.25 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 3 - 16 Hz
 Environment: LAB AIR; RT

Yield Strength: 56.9 ksi
 Ult. Strength:
 Specimen Thk: 0.26 in.
 Specimen Width: 12.007 in.
 Ref: DA001

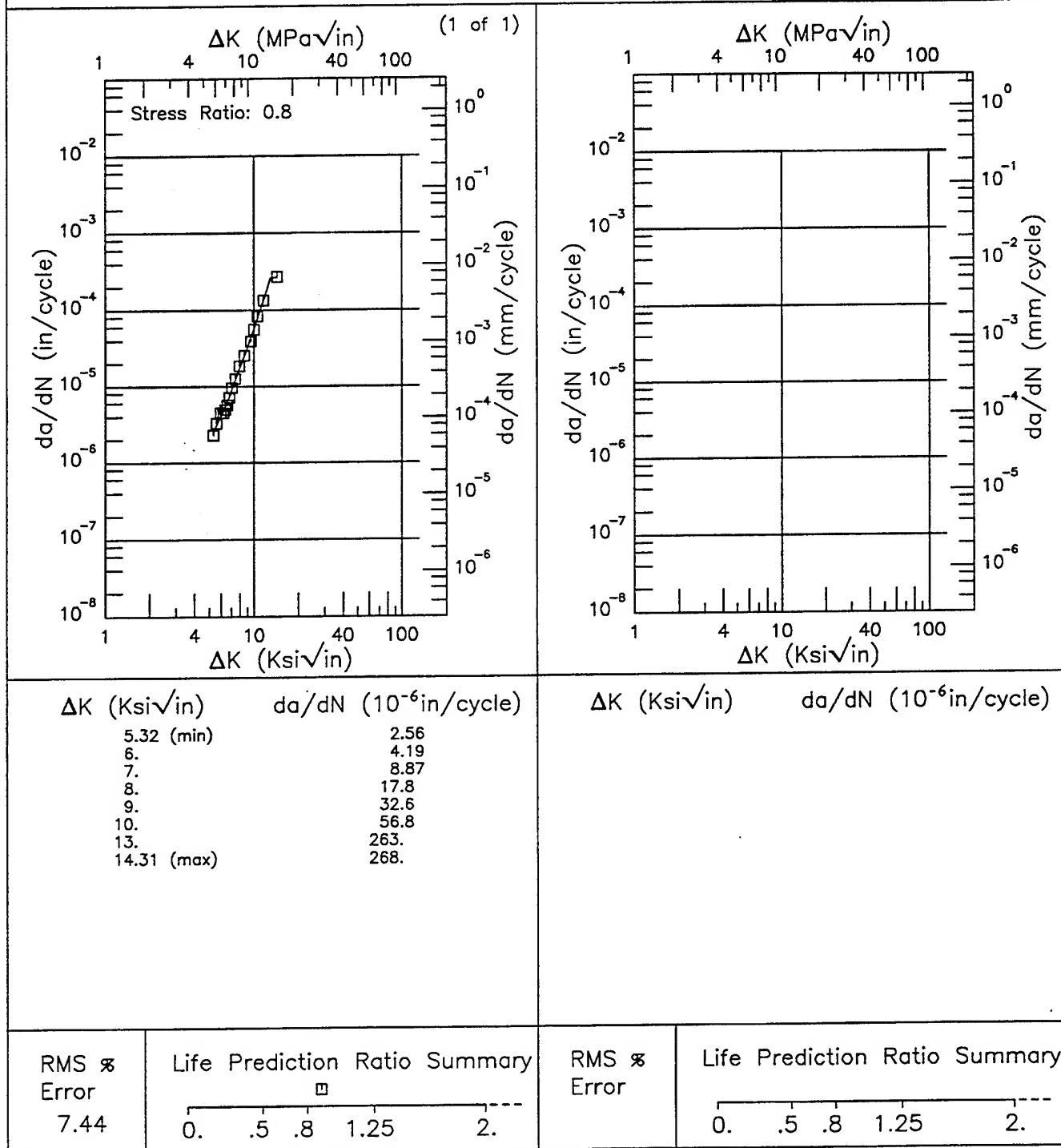


Figure 7.5.3.1.56

R

2024

Condition/Ht: T351

Form: Plate

Specimen Type: CCP (max stress specified)

Orientation: L-T

Frequency: 1 - 10 Hz

Environment: LAB AIR; RT

Yield Strength: 54.5 ksi

Ult. Strength:

Specimen Thk: 0.241 - 0.242 in.

Specimen Width: 8.995 - 9 in.

Ref: DA001

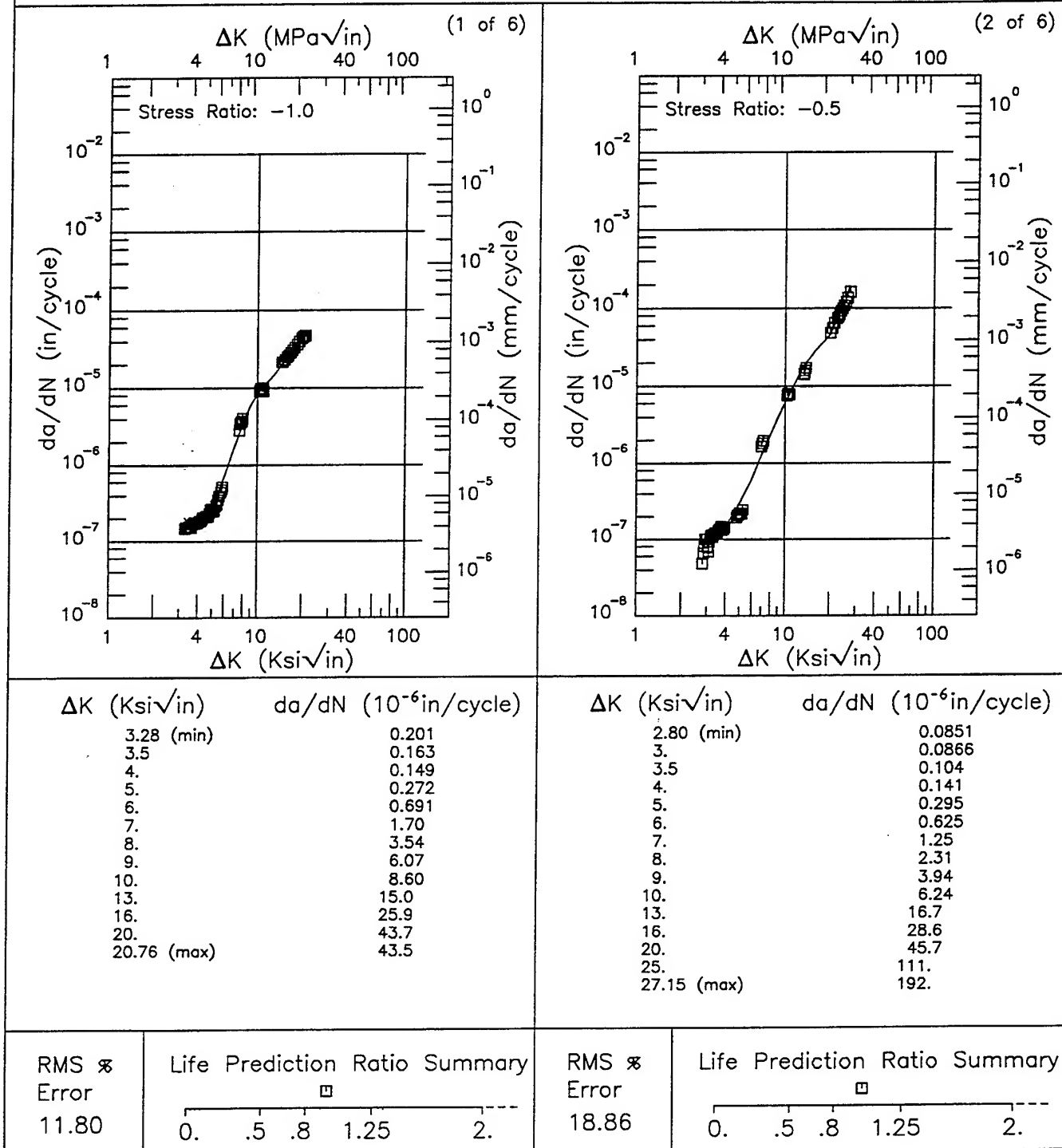


Figure 7.5.3.1.57

Condition/Ht: T351

Form: Plate

Specimen Type: CCP (max stress specified)

Orientation: L-T

Frequency: 1 - 10 Hz

Environment: LAB AIR; RT

Yield Strength: 54.5 ksi

Ult. Strength:

Specimen Thk: 0.241 - 0.242 in.

Specimen Width: 8.995 - 9 in.

Ref: DA001

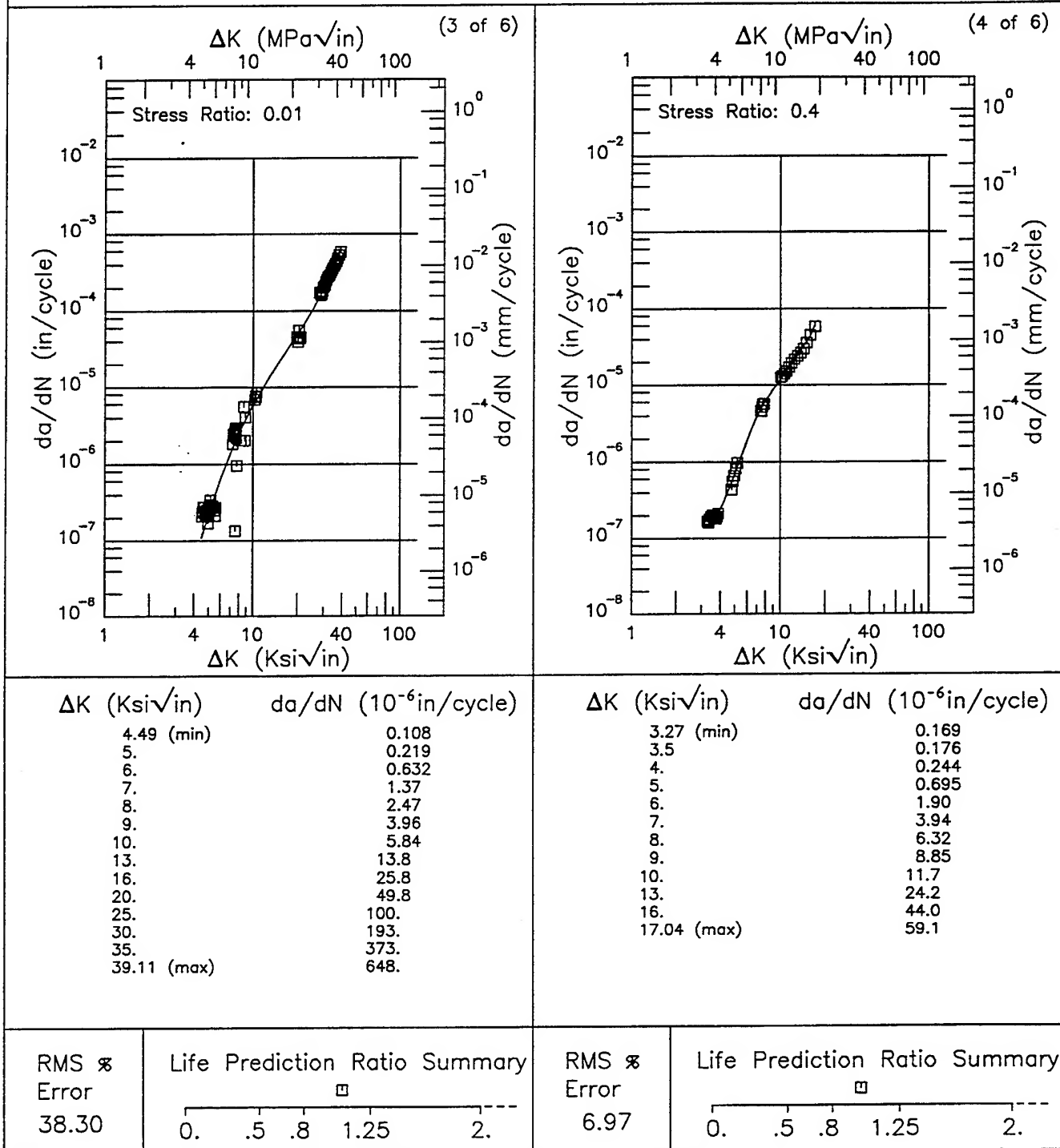


Figure 7.5.3.1.57 (Continued)

R

2024

Condition/Ht: T351

Form: Plate

Specimen Type: CCP (max stress specified)

Orientation: L-T

Frequency: 1 - 10 Hz

Environment: LAB AIR; RT

Yield Strength: 54.5 ksi

Ult. Strength:

Specimen Thk: 0.241 - 0.242 in.

Specimen Width: 8.995 - 9 in.

Ref: DA001

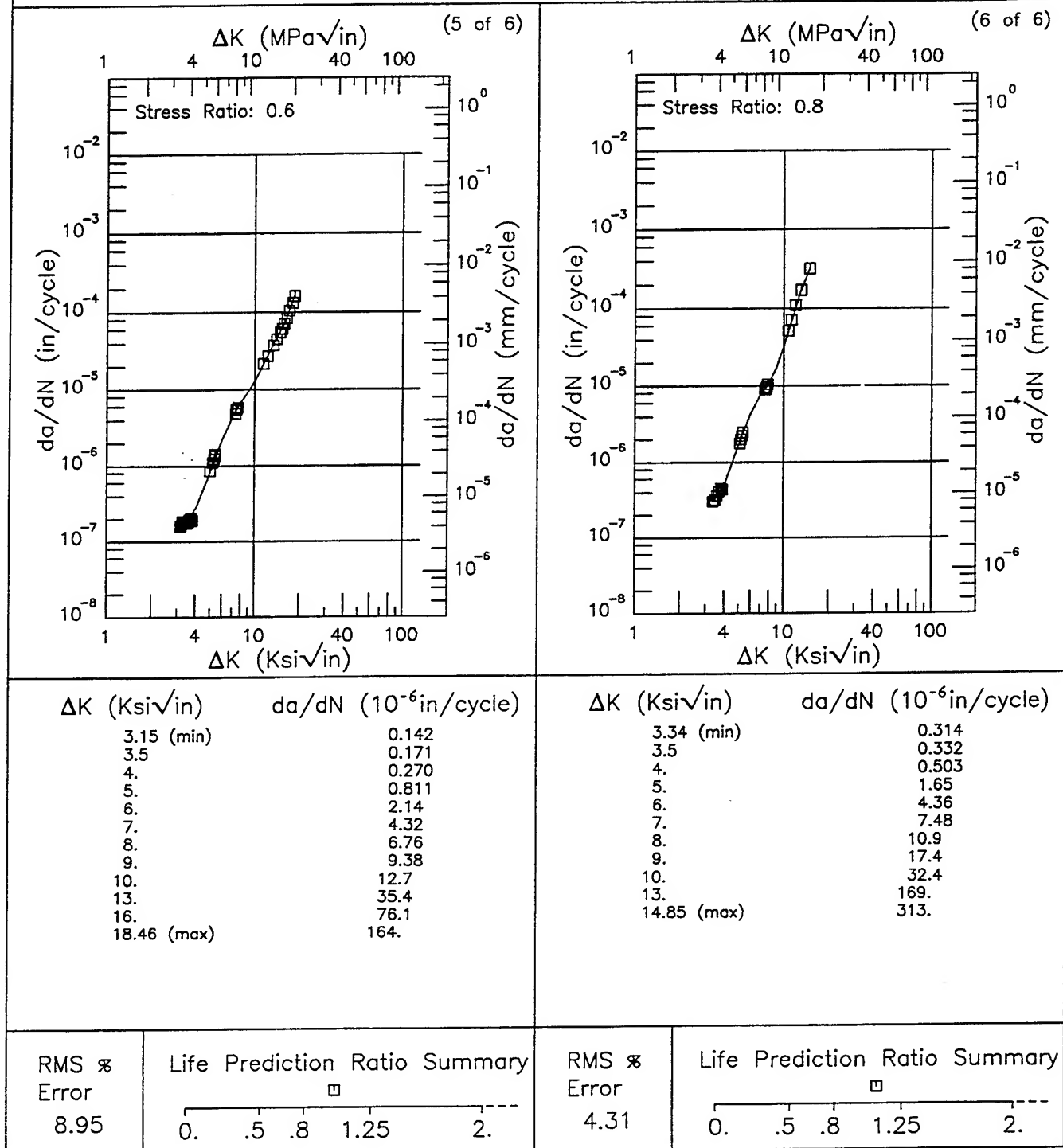


Figure 7.5.3.1.57 (Concluded)

Condition/Ht: T351
 Form: 0.25 in. Plate
 Specimen Type: CCP (max stress specified)
 Orientation: L-T
 Frequency: 1 - 2 Hz
 Environment: LAB AIR; -65°F

Yield Strength: 56.9 ksi
 Ult. Strength:
 Specimen Thk: 0.259 in.
 Specimen Width: 12.002 in.
 Ref: DA001

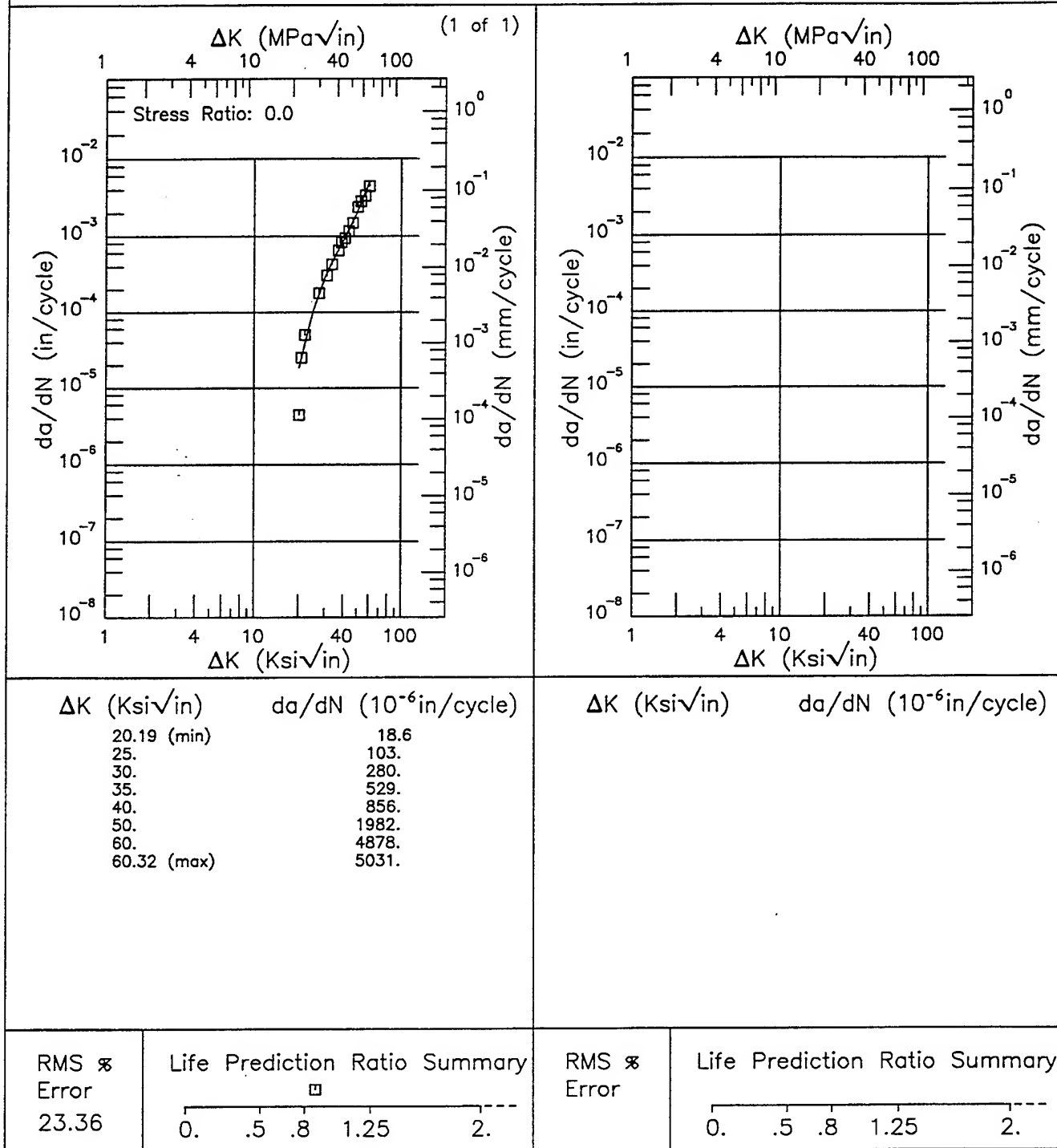


Figure 7.5.3.1.58

R

2024

Condition/Ht: T351
 Form: 0.25 in. Plate
 Specimen Type: CCP (max stress specified)
 Orientation: L-T
 Frequency: 3 Hz
 Environment: LAB AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.25 in.
 Specimen Width: 5 in.
 Ref: FR001

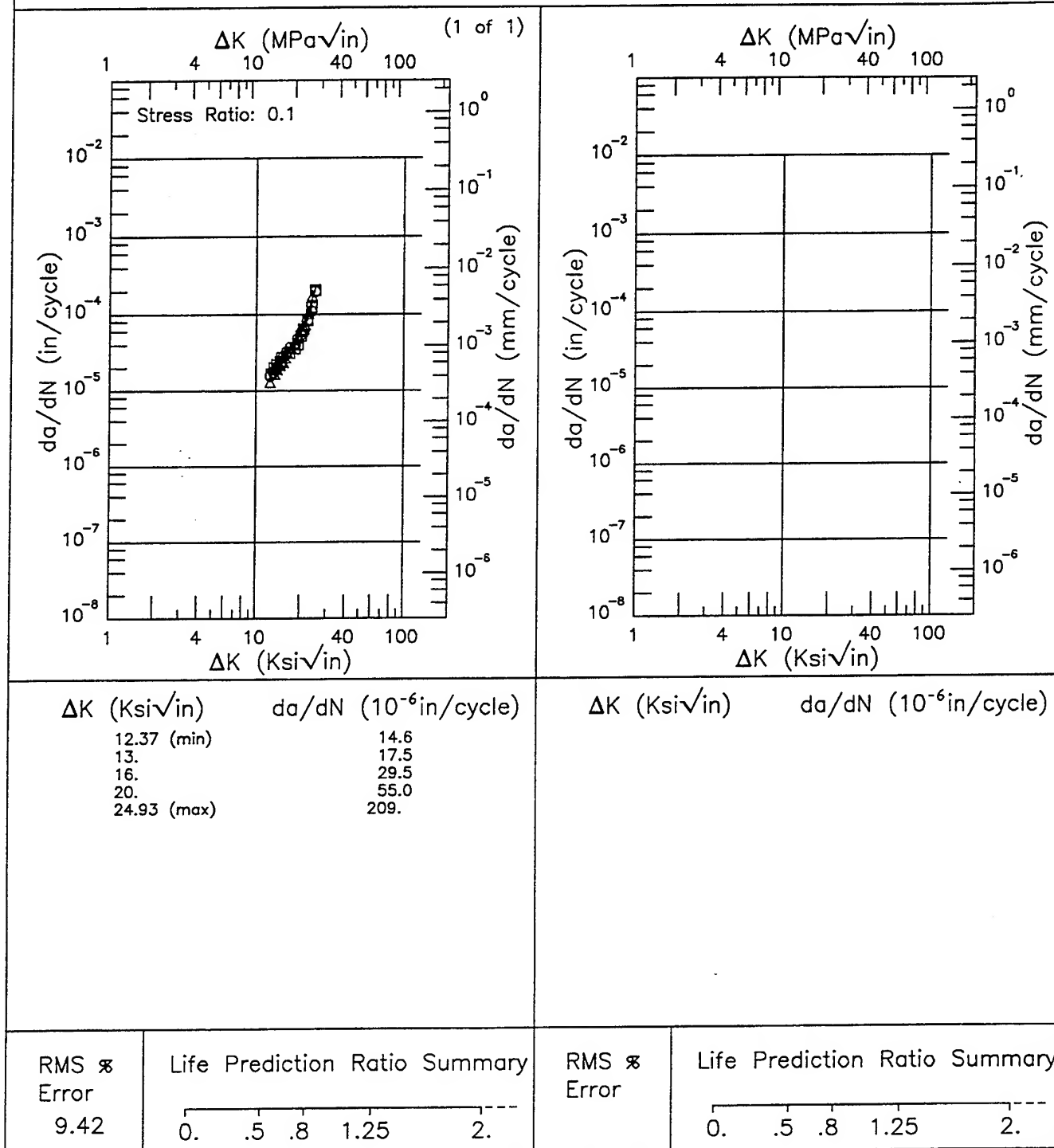


Figure 7.5.3.1.59

Condition/Ht: T351
Form: 0.75 - 1.25 in. Plate
Specimen Type: WOL
Orientation: L-T
Frequency: 25 Hz
Environment: H.H.A.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.248 - 0.249 in.
Specimen Width: 2.545 - 2.546 in.
Ref: AL010

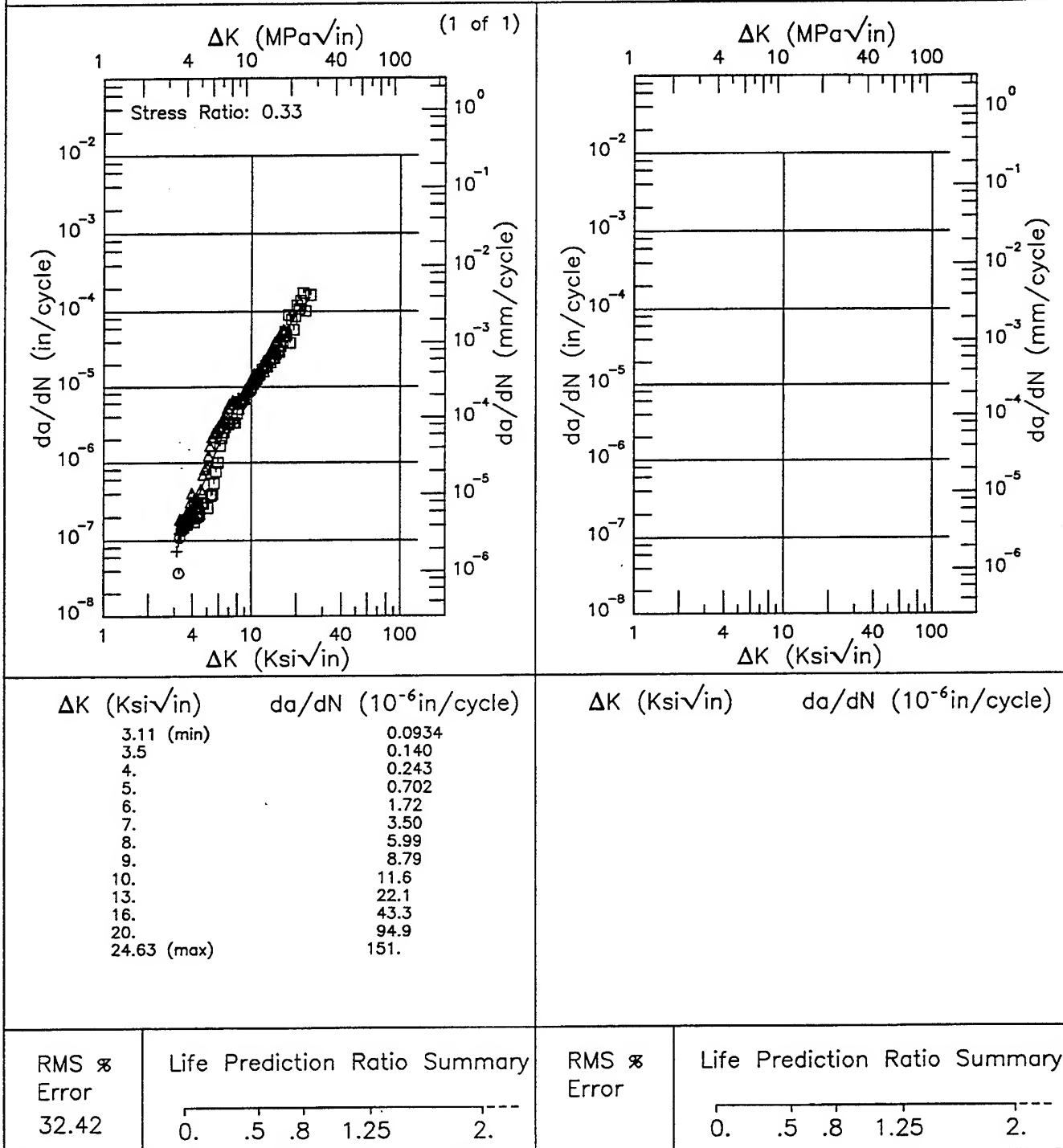


Figure 7.5.3.1.60

E

2024

Condition/Ht: T3511

Form: Extrusion

Specimen Type: CT

Orientation: L-T

Stress Ratio: 0.05

Frequency: 9 Hz

Yield Strength: 58.7 ksi

Ult. Strength: 79.3 ksi

Specimen Thk: 0.37 in.

Specimen Width: 4 in.

Ref: BW001

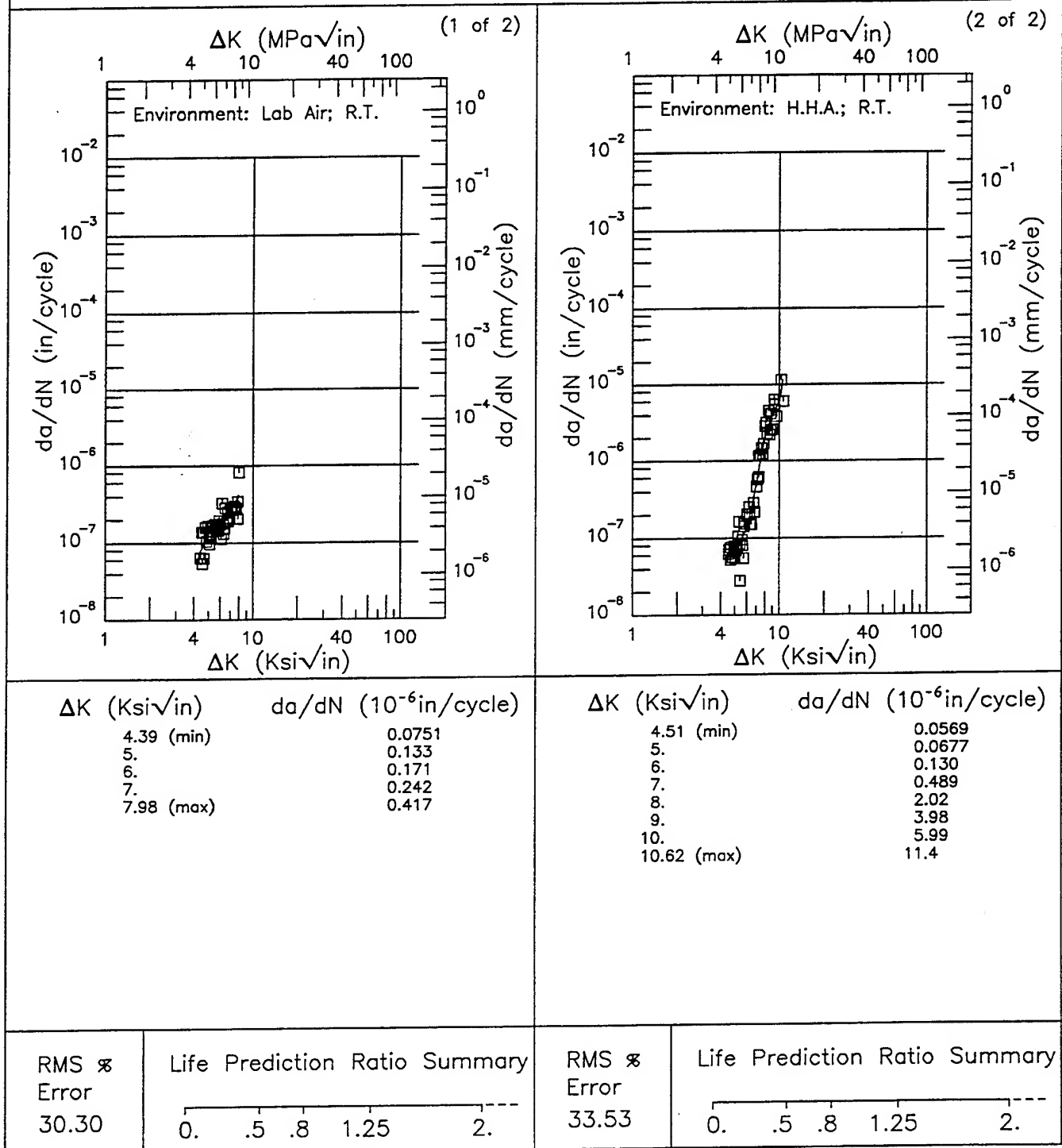


Figure 7.5.3.1.61

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R

2024

Condition/Ht: T3511
 Form: 1 in. Extrusion
 Specimen Type: CT
 Orientation: L-T
 Frequency: 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 54.7 ksi
 Ult. Strength:
 Specimen Thk: 0.244 - 0.246 in.
 Specimen Width: 2 in.
 Ref: SW001

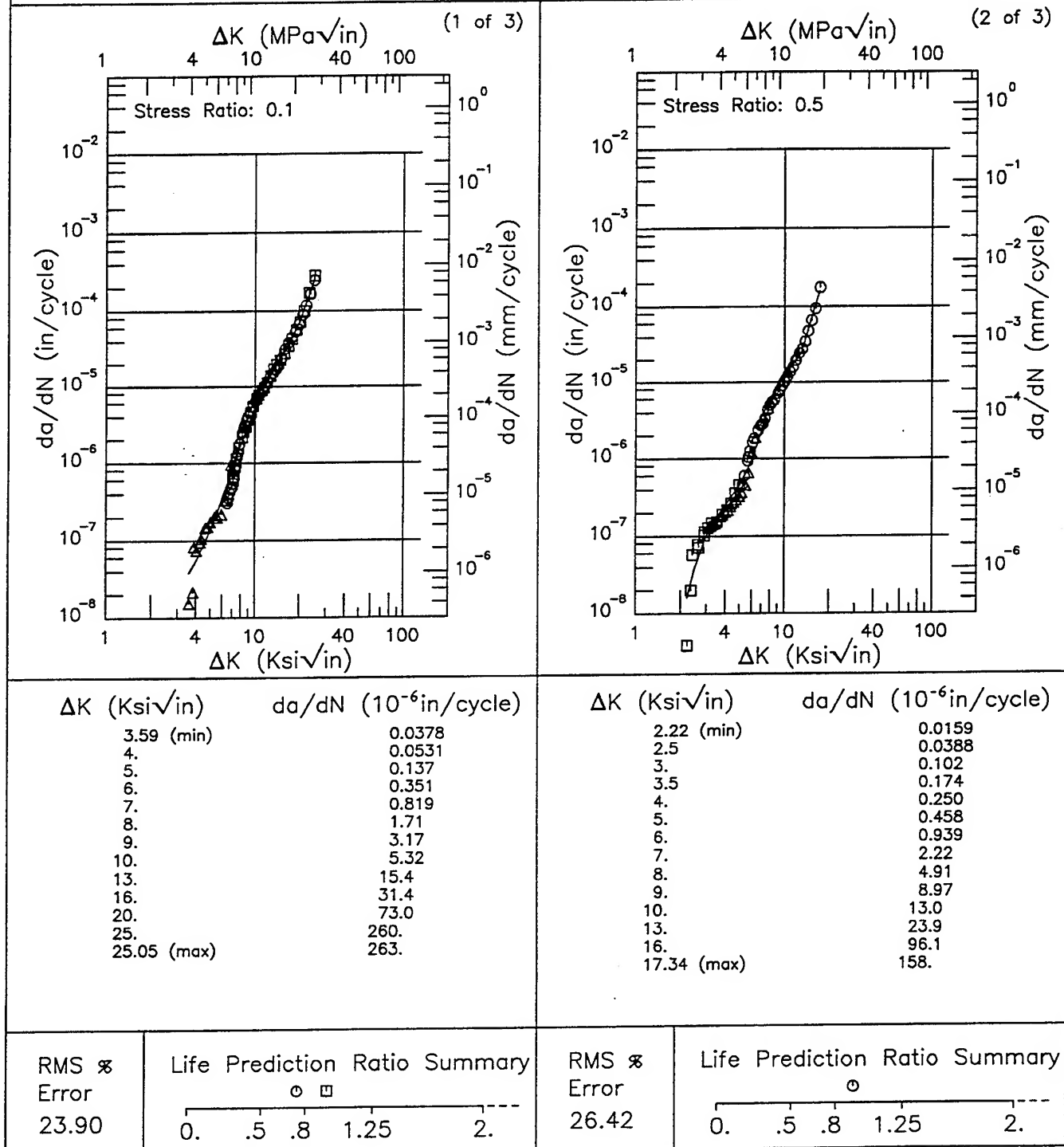


Figure 7.5.3.1.62

Condition/Ht: T3511
 Form: 1 in. Extrusion
 Specimen Type: CT
 Orientation: L-T
 Frequency: 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 54.7 ksi
 Ult. Strength:
 Specimen Thk: 0.244 - 0.246 in.
 Specimen Width: 2 in.
 Ref: SW001

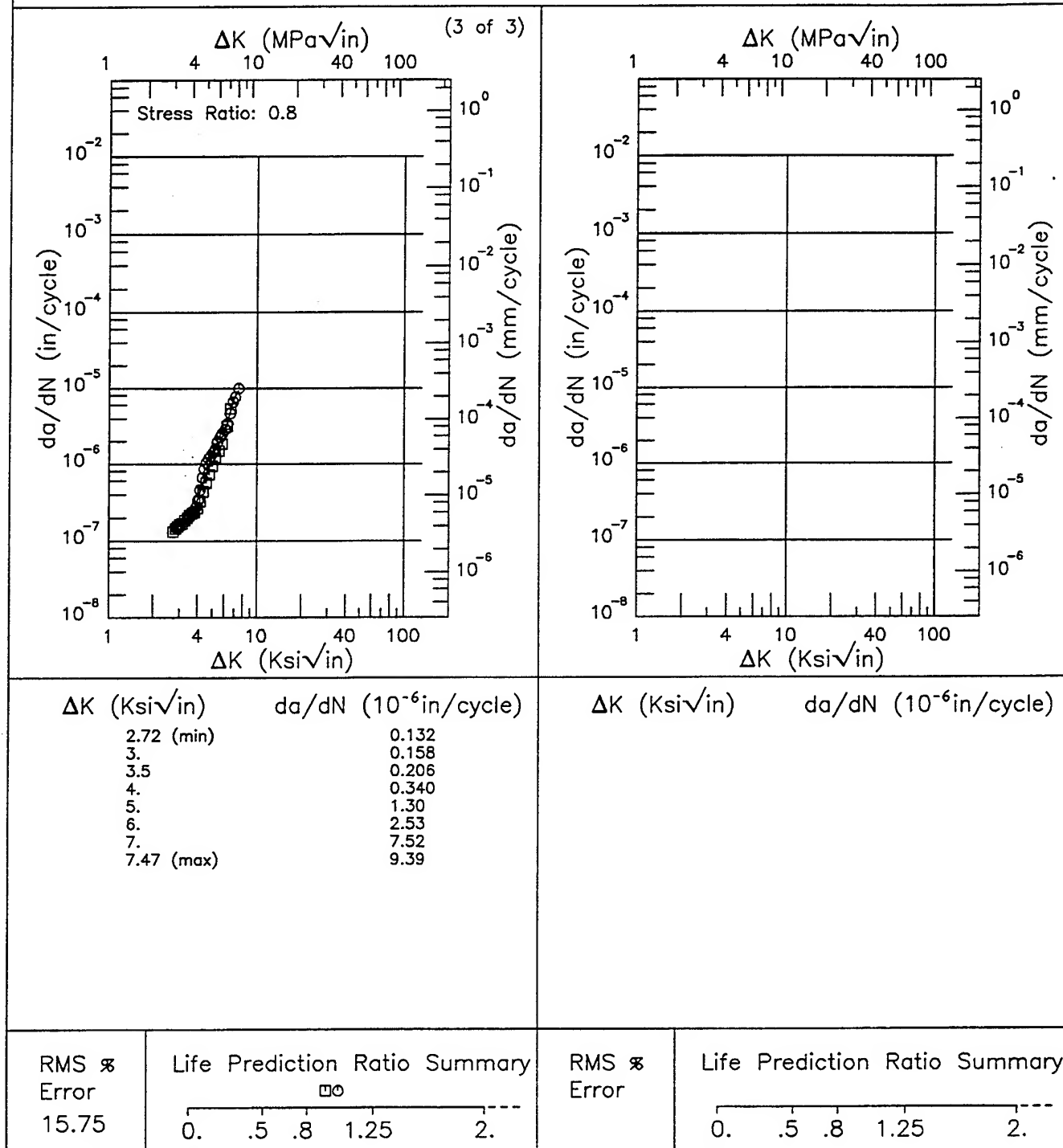


Figure 7.5.3.1.62 (Concluded)

2024

E

Condition/Ht: T3511
Form: Extrusion
Specimen Type: CT
Orientation: L-T
Stress Ratio: 0.5
Frequency: 9 Hz

Yield Strength: 58.7 ksi
Ult. Strength: 79.3 ksi
Specimen Thk: 0.37 in.
Specimen Width: 4 in.
Ref: BW001

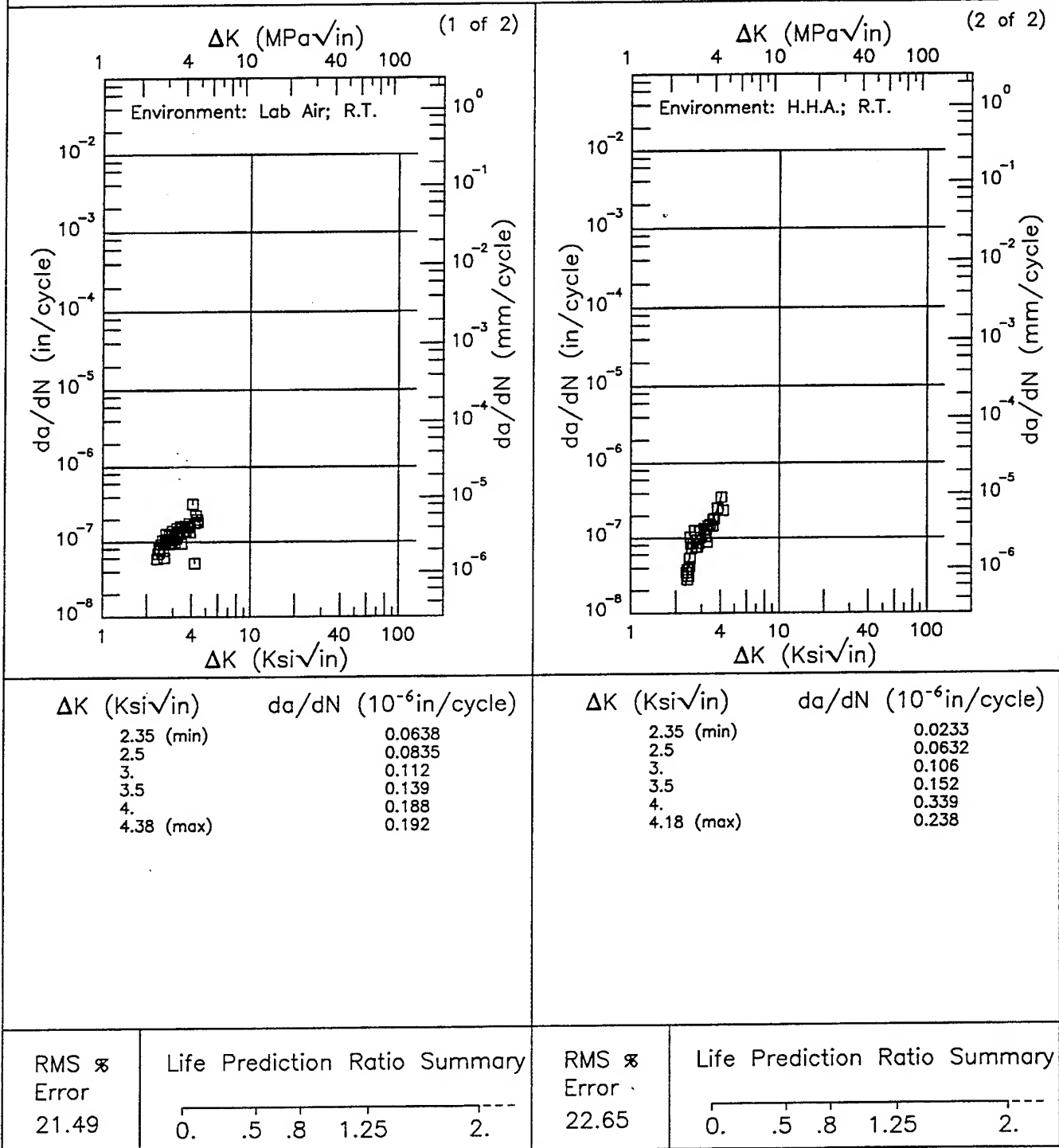


Figure 7.5.3.1.63

Yield Strength: 54.7 ksi
Ult. Strength:
Specimen Thk: 0.246 in.
Specimen Width: 2 in.
Ref: SW001



2024

Condition/Ht: T3511
Form: 0.2 in. Extrusion
Specimen Type: CCP (max load specified)
Orientation: L-T
Frequency: 6 Hz
Environment: H.H.A.; RT

Yield Strength: 61.2 ksi
Ult. Strength: 80.4 ksi
Specimen Thk:
Specimen Width: 4 in.
Ref: BW005

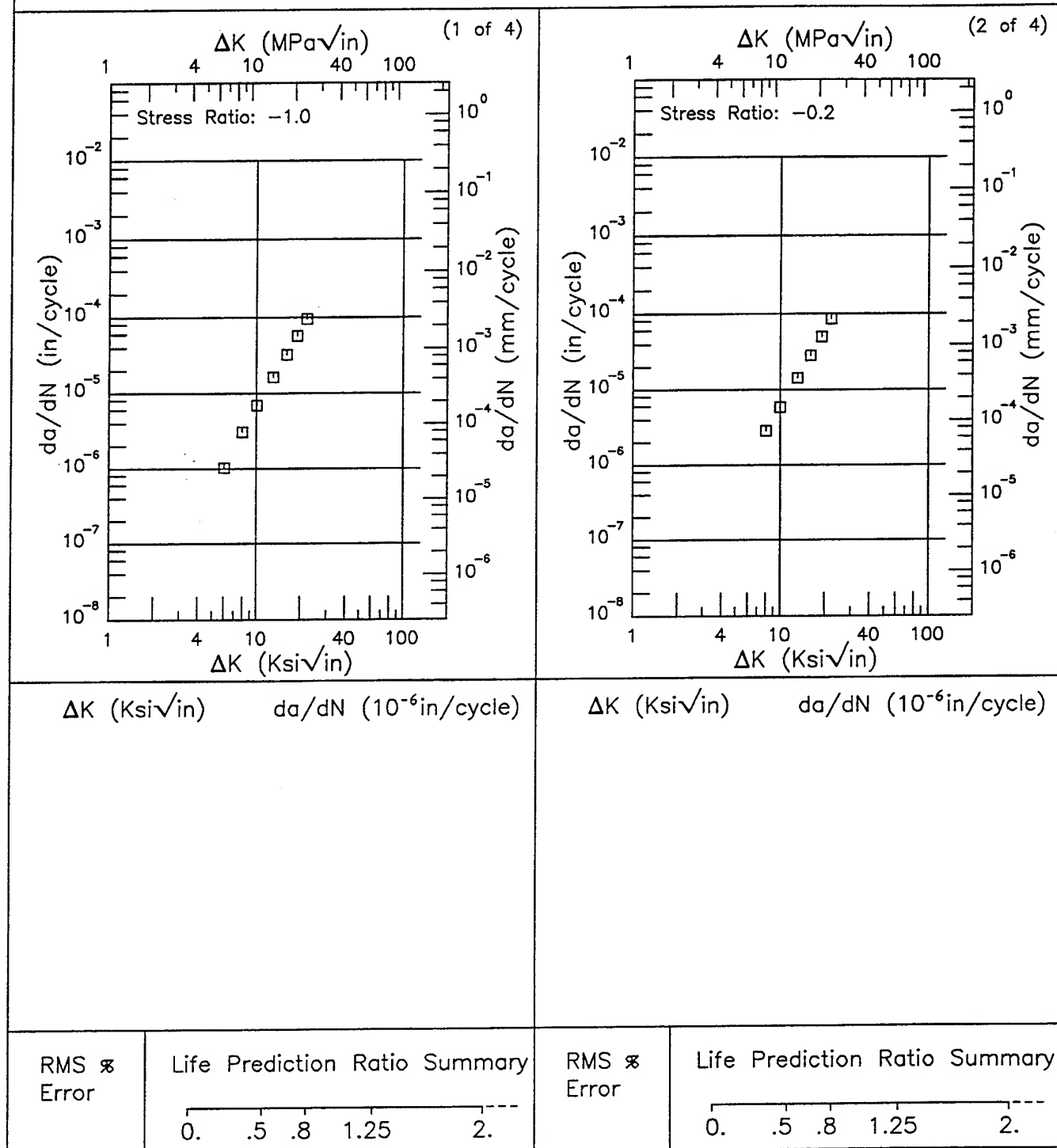


Figure 7.5.3.1.65

Condition/Ht: T3511
 Form: 0.2 in. Extrusion
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 6 Hz
 Environment: H.H.A.; RT

Yield Strength: 61.2 ksi
 Ult. Strength: 80.4 ksi
 Specimen Thk:
 Specimen Width: 4 in.
 Ref: BW005

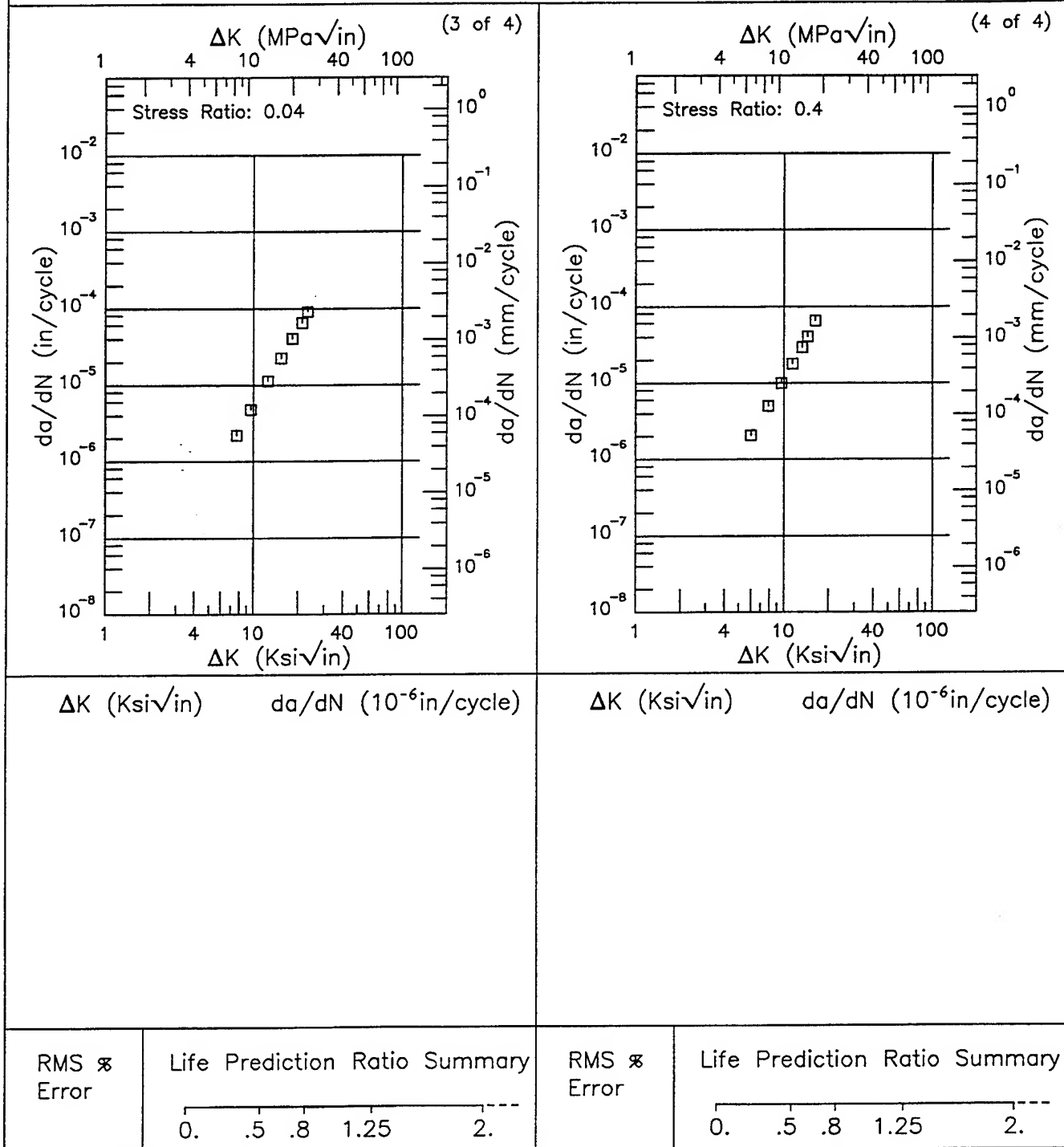


Figure 7.5.3.1.65 (Concluded)

R

2024

Condition/Ht: T3511

Form: Extrusion

Specimen Type: CCP (max stress specified)

Orientation: L-T

Frequency: 9 Hz

Environment: H.H.A.; RT

Yield Strength: 58.7 ksi

Ult. Strength: 79.3 ksi

Specimen Thk: 0.37 in.

Specimen Width: 5 in.

Ref: BW001

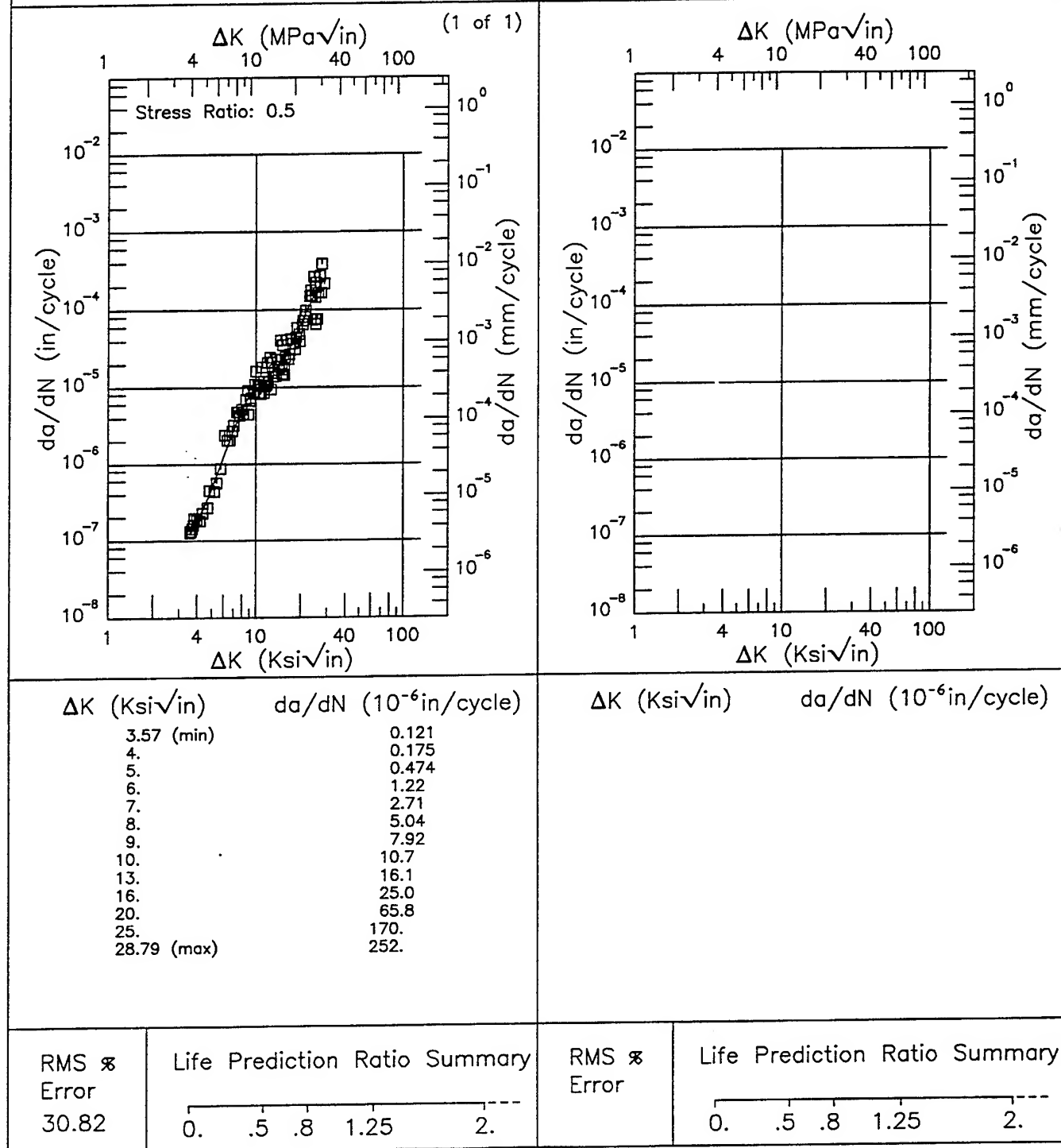


Figure 7.5.3.1.66

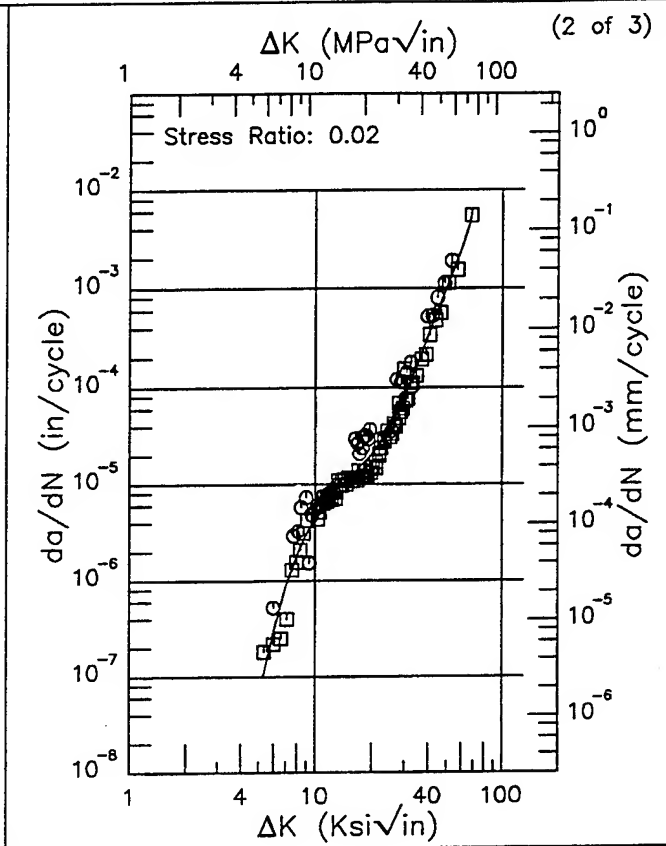
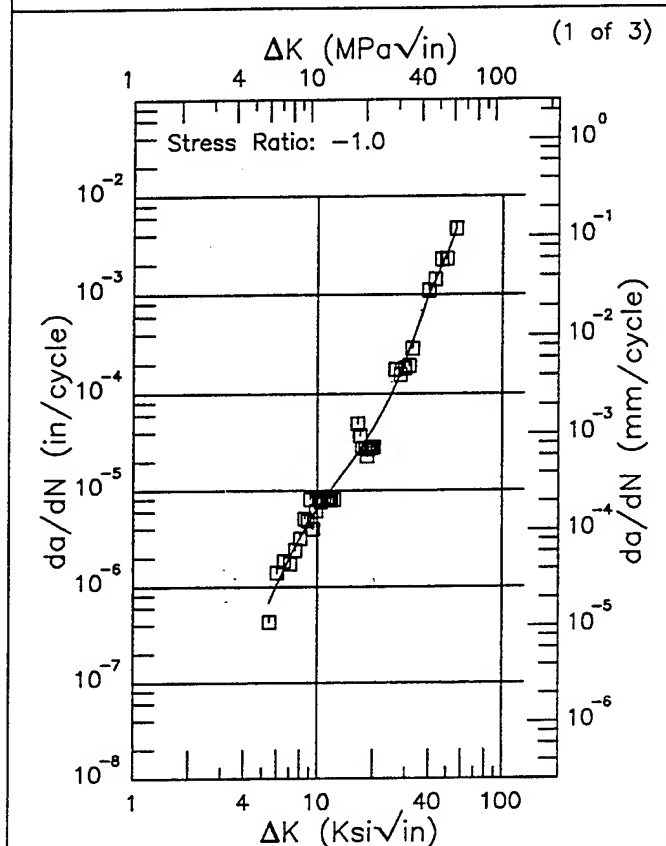
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R

2024

Condition/Ht: T42
 Form: 0.75 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 10 Hz
 Environment: LAB AIR; RT

Yield Strength: 45.4 ksi
 Ult. Strength: 68.5 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 4 in.
 Ref: MA006



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.48 (min)	0.680
6.	1.05
7.	1.99
8.	3.22
9.	4.70
10.	6.41
13.	13.0
16.	22.7
20.	43.8
25.	97.2
30.	220.
35.	497.
40.	1006.
50.	2563.
55.92 (max)	4494.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.32 (min)	0.103
6.	0.296
7.	0.875
8.	1.82
9.	3.04
10.	4.41
13.	8.67
16.	13.0
20.	20.7
25.	38.9
30.	80.9
35.	170.
40.	335.
50.	999.
60.	2462.
67.71 (max)	5220.

RMS % Error	Life Prediction Ratio Summary
28.82	0. .5 .8 1.25 2. ---

RMS % Error	Life Prediction Ratio Summary
44.77	0. .5 .8 1.25 2. ---

Figure 7.5.3.1.67

Condition/Ht: T42
 Form: 0.75 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 10 Hz
 Environment: LAB AIR; RT

Yield Strength: 45.4 ksi
 Ult. Strength: 68.5 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 4 in.
 Ref: MA006

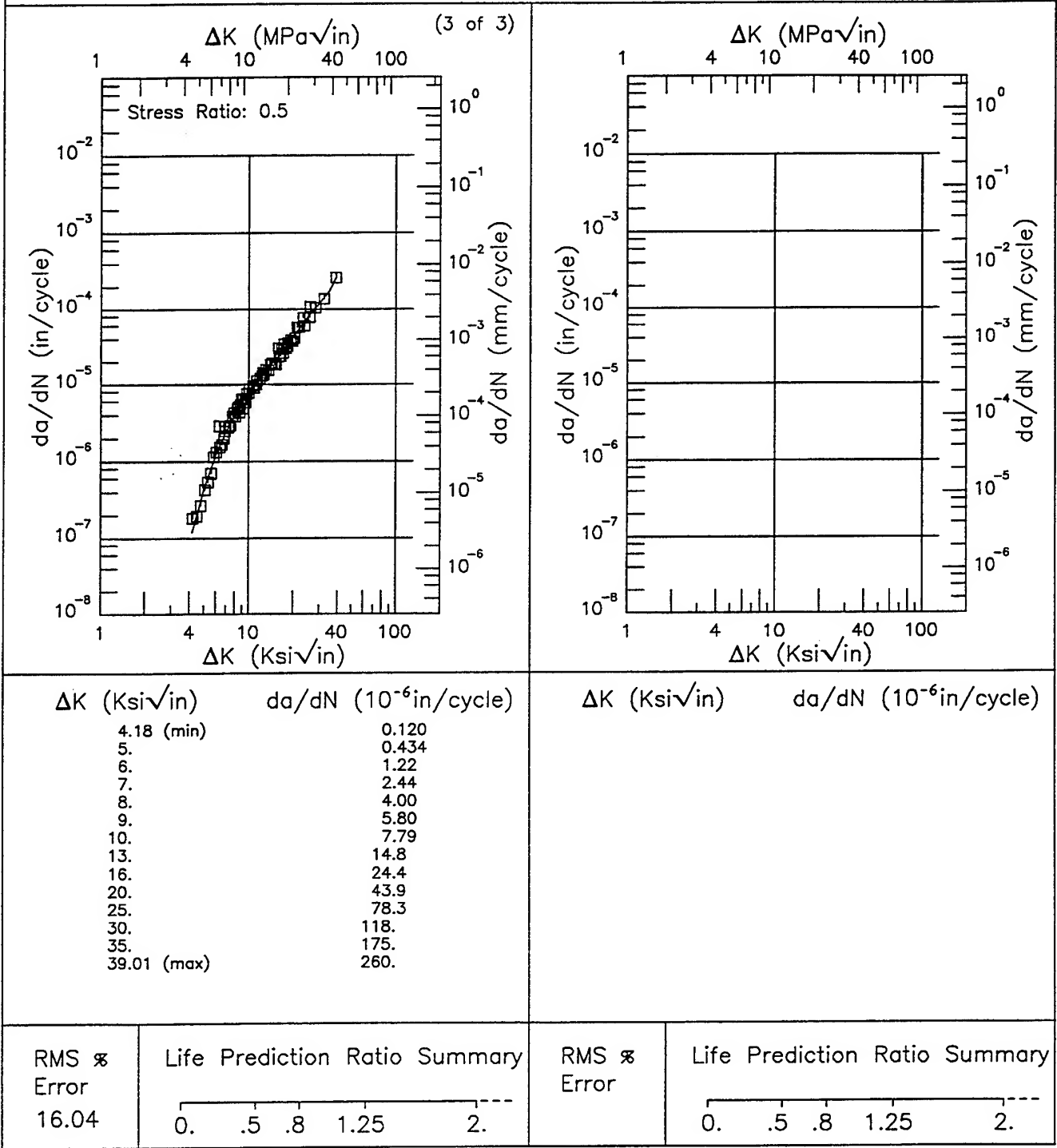
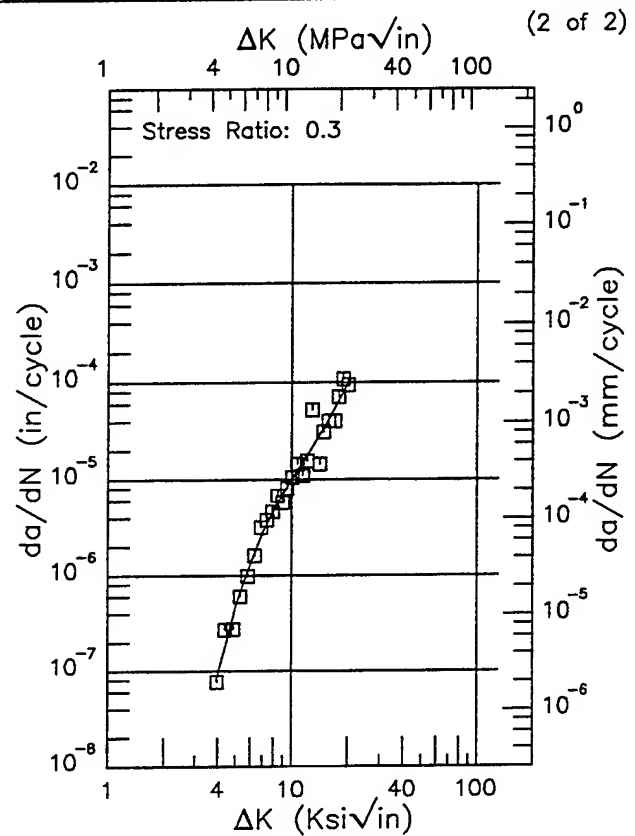
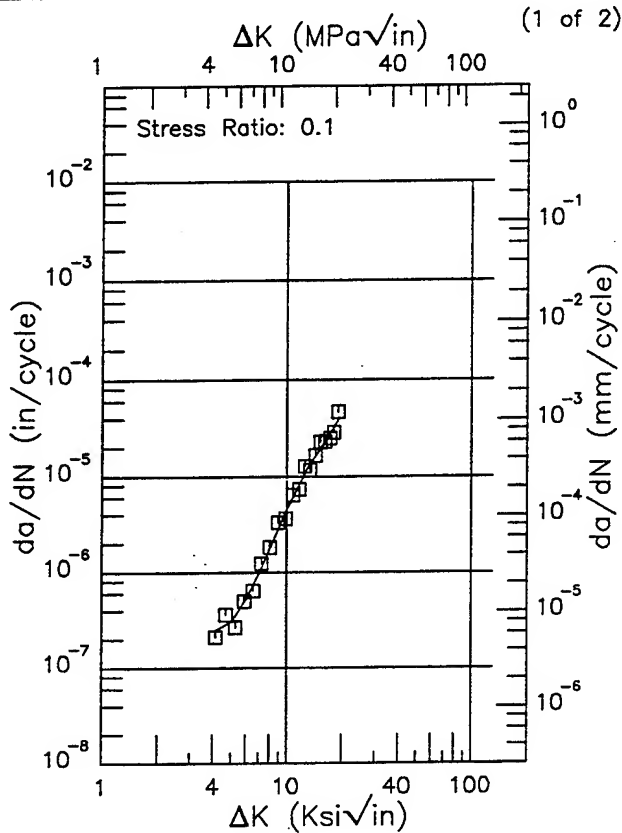


Figure 7.5.3.1.67 (Concluded)

R | 2024 |

Condition/Ht: T62
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 Hz
 Environment: H.H.A.; RT

Yield Strength: 60.3 ksi
 Ult. Strength: 74.9 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.12 (min)	0.249
5.	0.307
6.	0.516
7.	0.942
8.	1.69
9.	2.89
10.	4.60
13.	12.2
16.	22.6
19.00 (max)	38.9

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
3.95 (min)	0.0822
4.	0.0913
5.	0.465
6.	1.32
7.	2.74
8.	4.68
9.	7.13
10.	10.1
13.	22.4
16.	42.9
20.	96.4
20.04 (max)	97.2

RMS %
 Error
 14.52

Life Prediction Ratio Summary

RMS %
 Error
 36.44

Life Prediction Ratio Summary

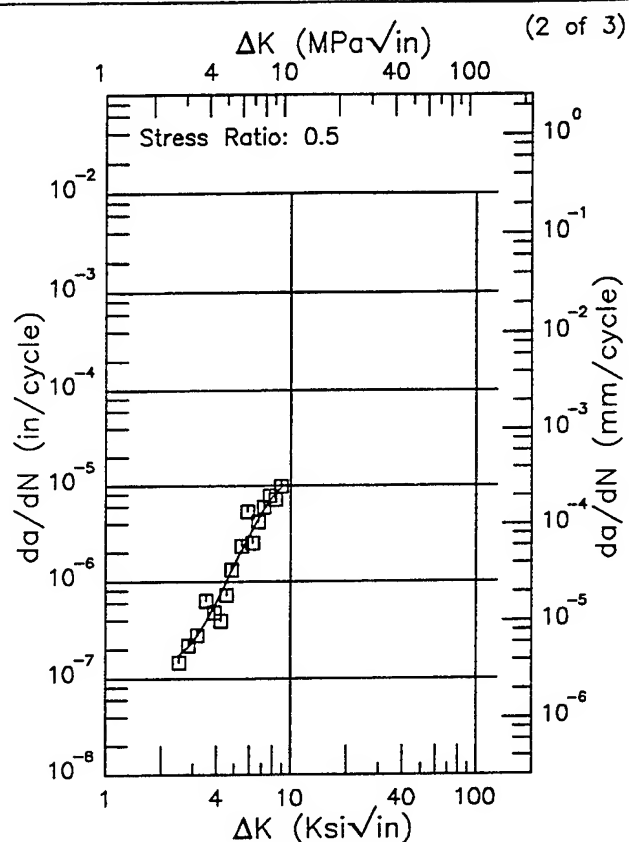
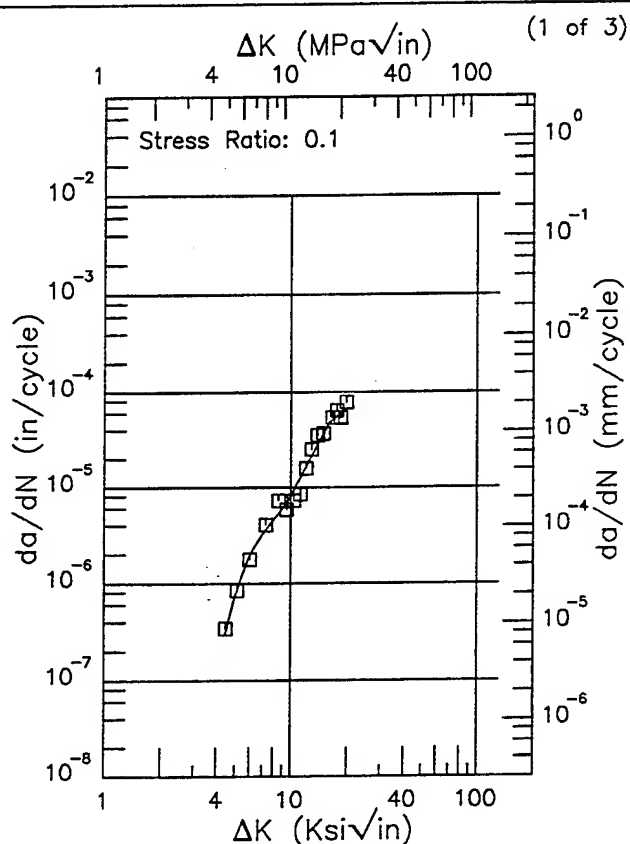
Figure 7.5.3.1.68

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R 2024

Condition/Ht: T62
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 60.3 ksi
 Ult. Strength: 74.9 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.46 (min)	0.303
5.	0.739
6.	1.93
7.	3.22
8.	4.51
9.	6.03
10.	8.18
13.	21.5
16.	48.1
19.67 (max)	66.0

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
2.50 (min)	0.172
3.	0.241
3.5	0.379
4.	0.610
5.	1.48
6.	3.03
7.	5.21
8.	7.62
8.83 (max)	9.38

RMS %
 Error
 17.88

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error
 33.44

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.5.3.1.69

Condition/Ht: T62
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 60.3 ksi
 Ult. Strength: 74.9 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

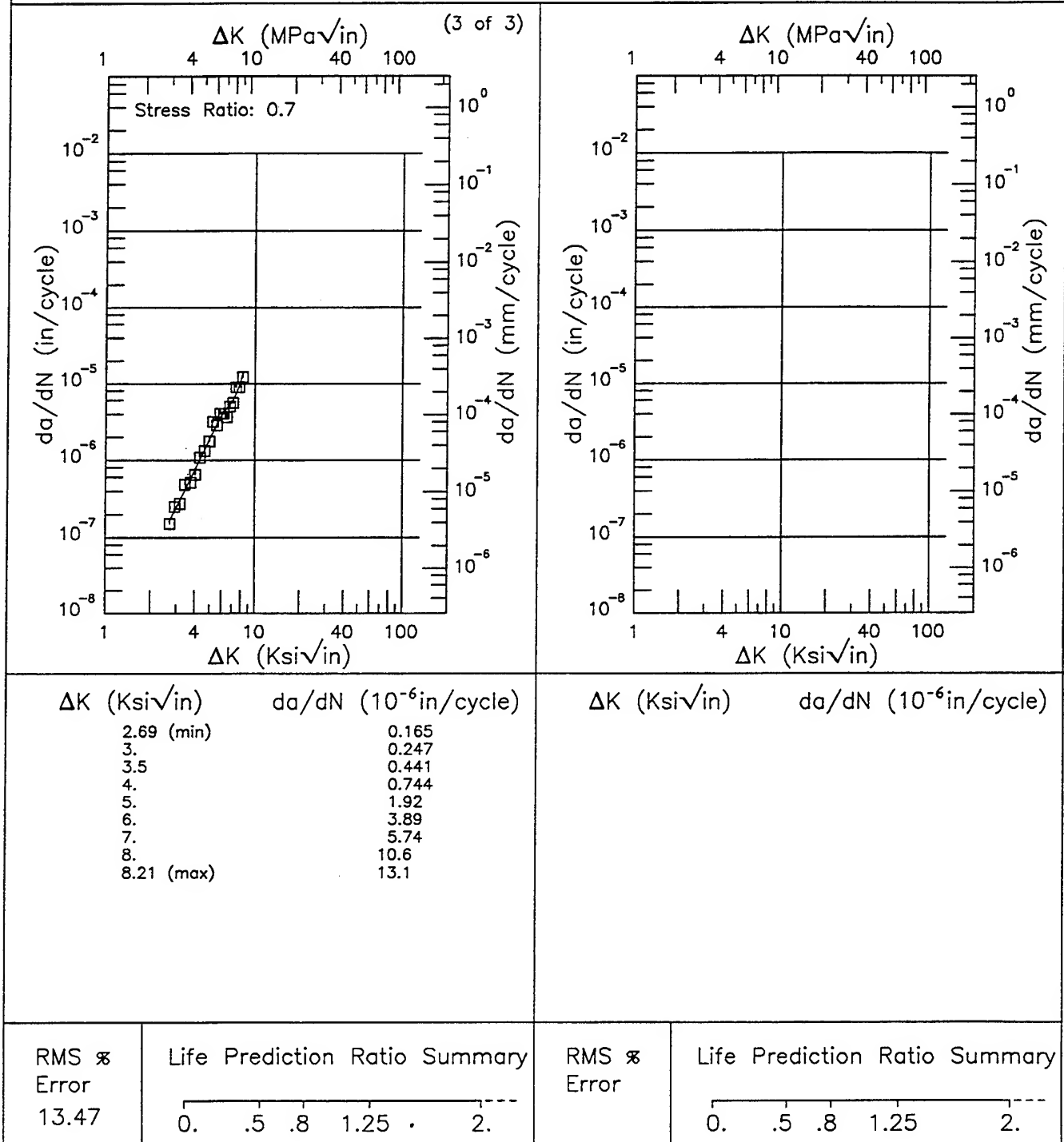


Figure 7.5.3.1.69 (Concluded)

R

2024

Condition/Ht: T62
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 58.2 ksi
 Ult. Strength: 73.5 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

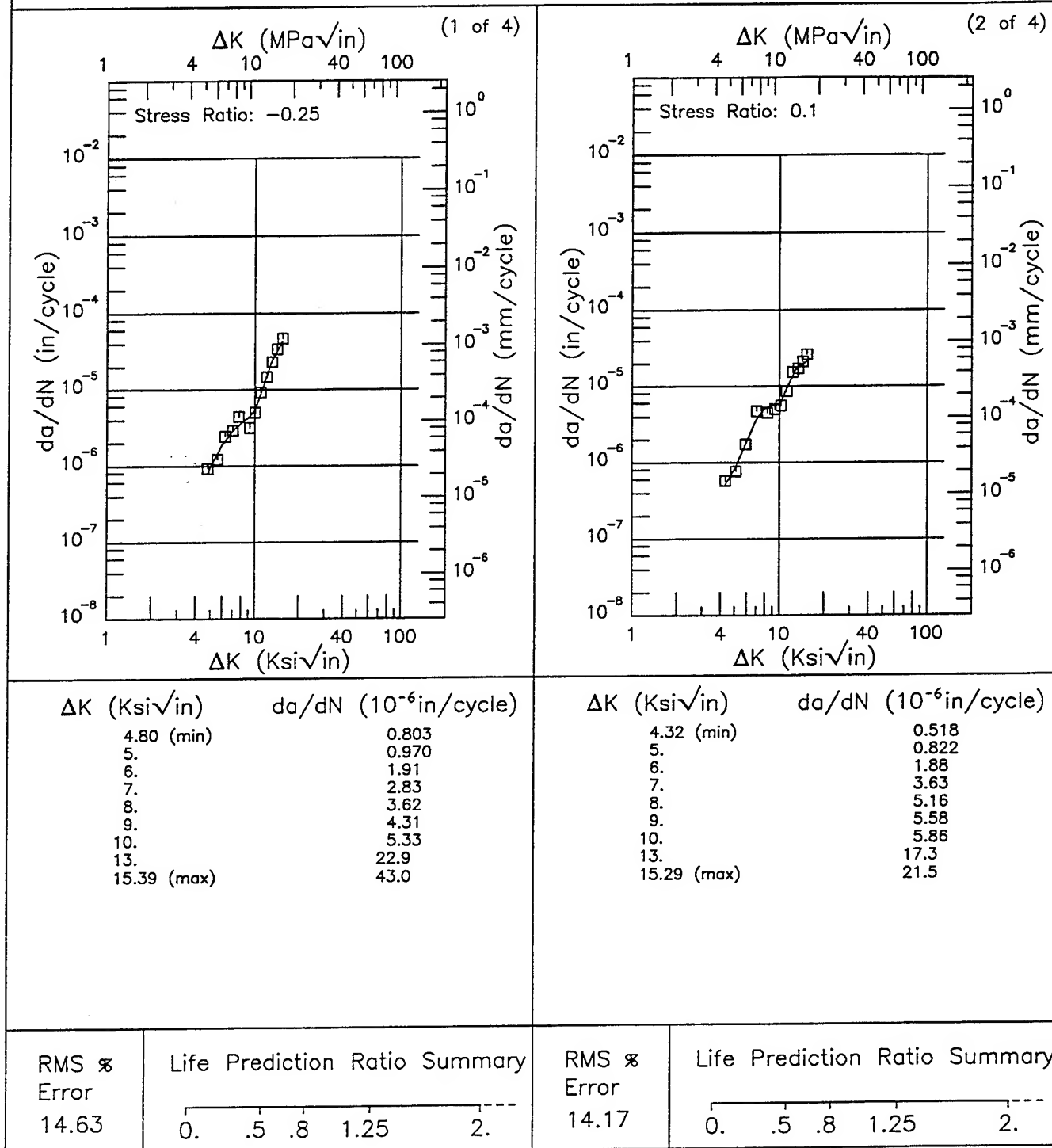


Figure 7.5.3.1.70

Condition/Ht: T62
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 58.2 ksi
 Ult. Strength: 73.5 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

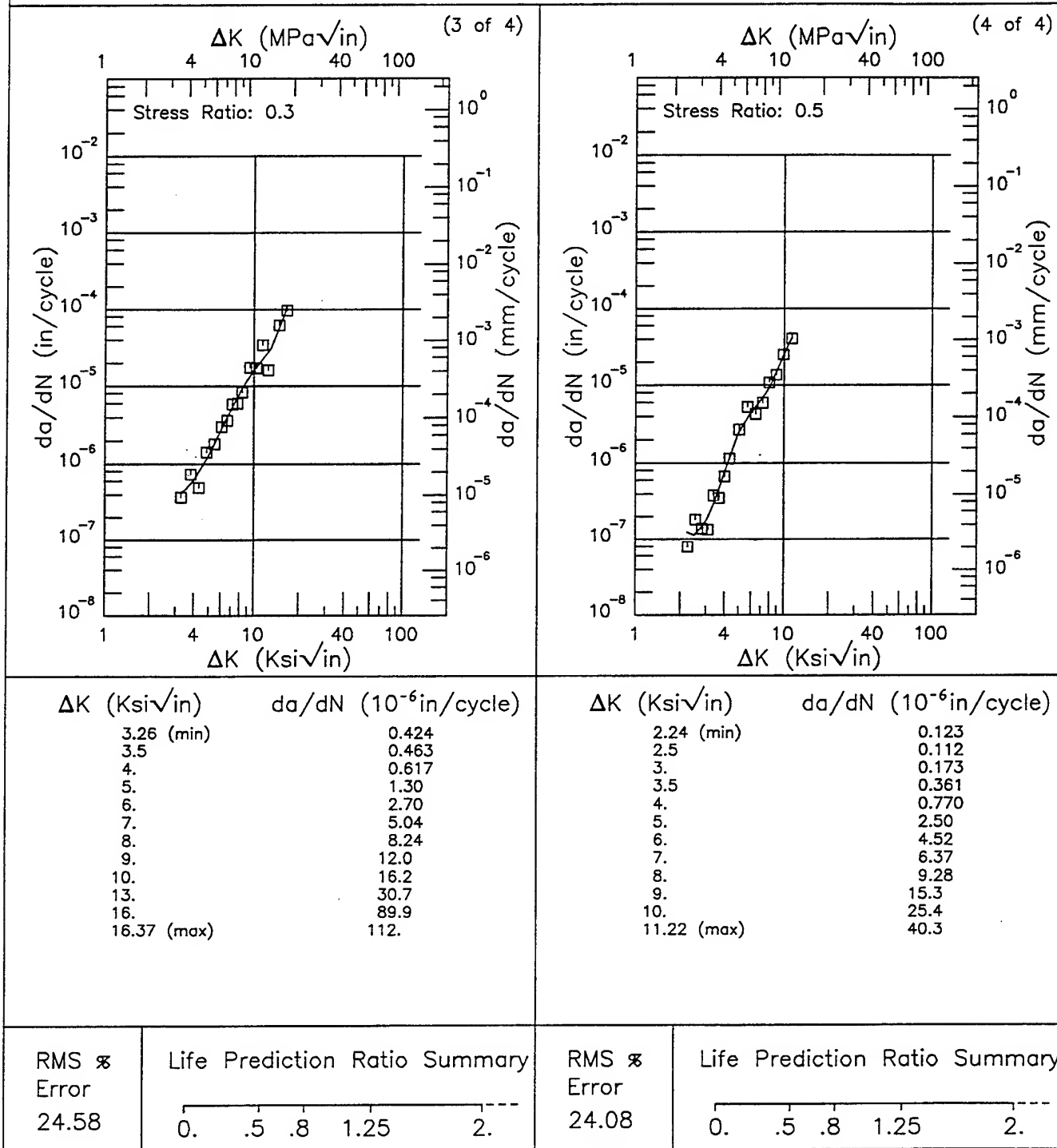


Figure 7.5.3.1.70 (Concluded)

R | 2024 |

Condition/Ht: T62
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength: 58.2 ksi
 Ult. Strength: 73.5 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

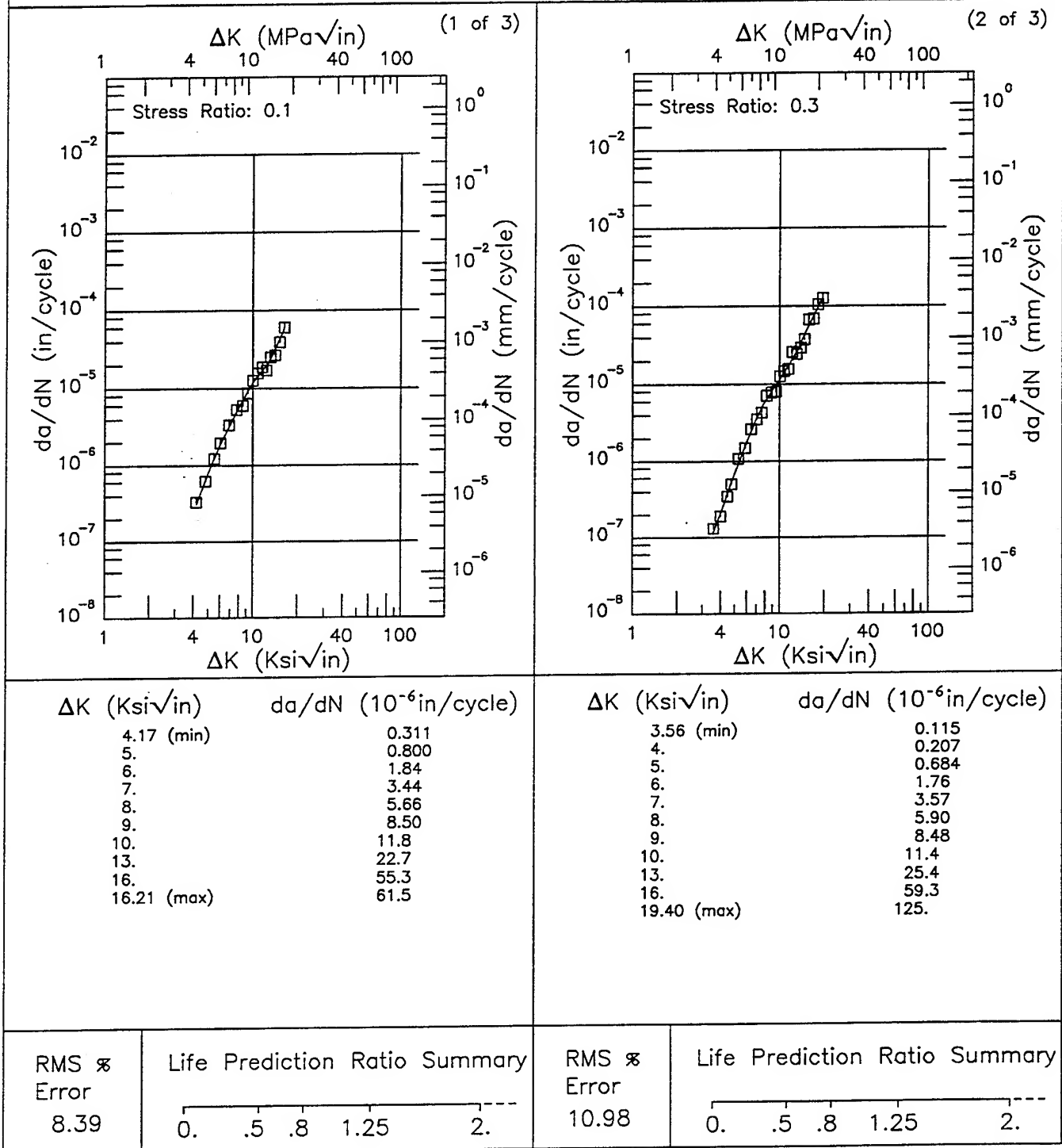


Figure 7.5.3.1.71

Condition/Ht: T62

Form: 0.13 in. Sheet

Specimen Type: CCP (max load specified)

Orientation: T-L

Frequency: 6 Hz

Environment: DRY AIR; RT

Yield Strength: 58.2 ksi

Ult. Strength: 73.5 ksi

Specimen Thk: 0.125 in.

Specimen Width: 6 in.

Ref: GD004

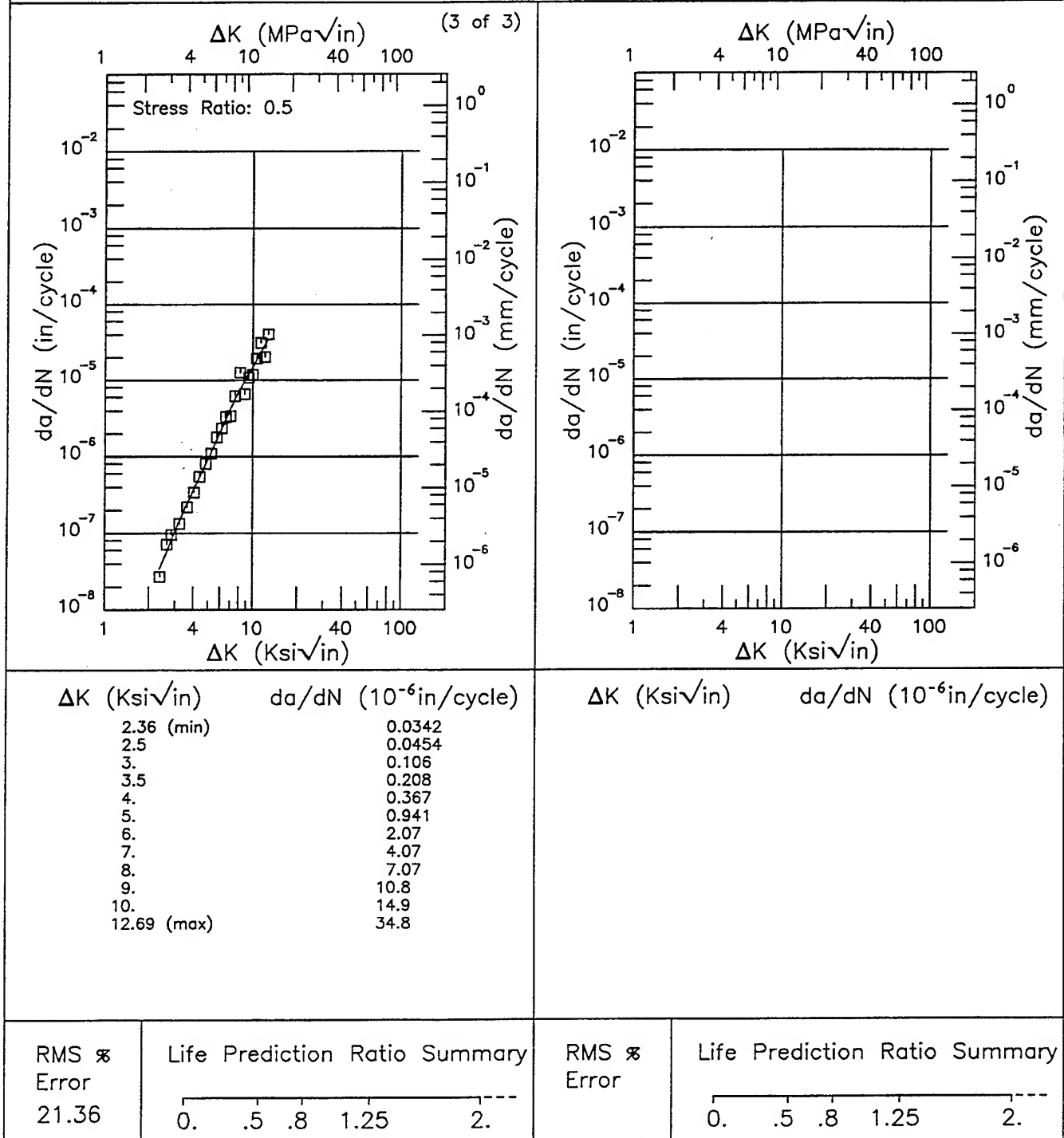


Figure 7.5.3.1.71 (Concluded)

R

2024

Condition/Ht: T62

Form: 0.13 in. Sheet

Specimen Type: CCP (max load specified)

Orientation: T-L

Frequency: 1 Hz

Environment: H.H.A.; RT

Yield Strength: 58.2 ksi

Ult. Strength: 73.5 ksi

Specimen Thk: 0.125 in.

Specimen Width: 6 in.

Ref: GD004

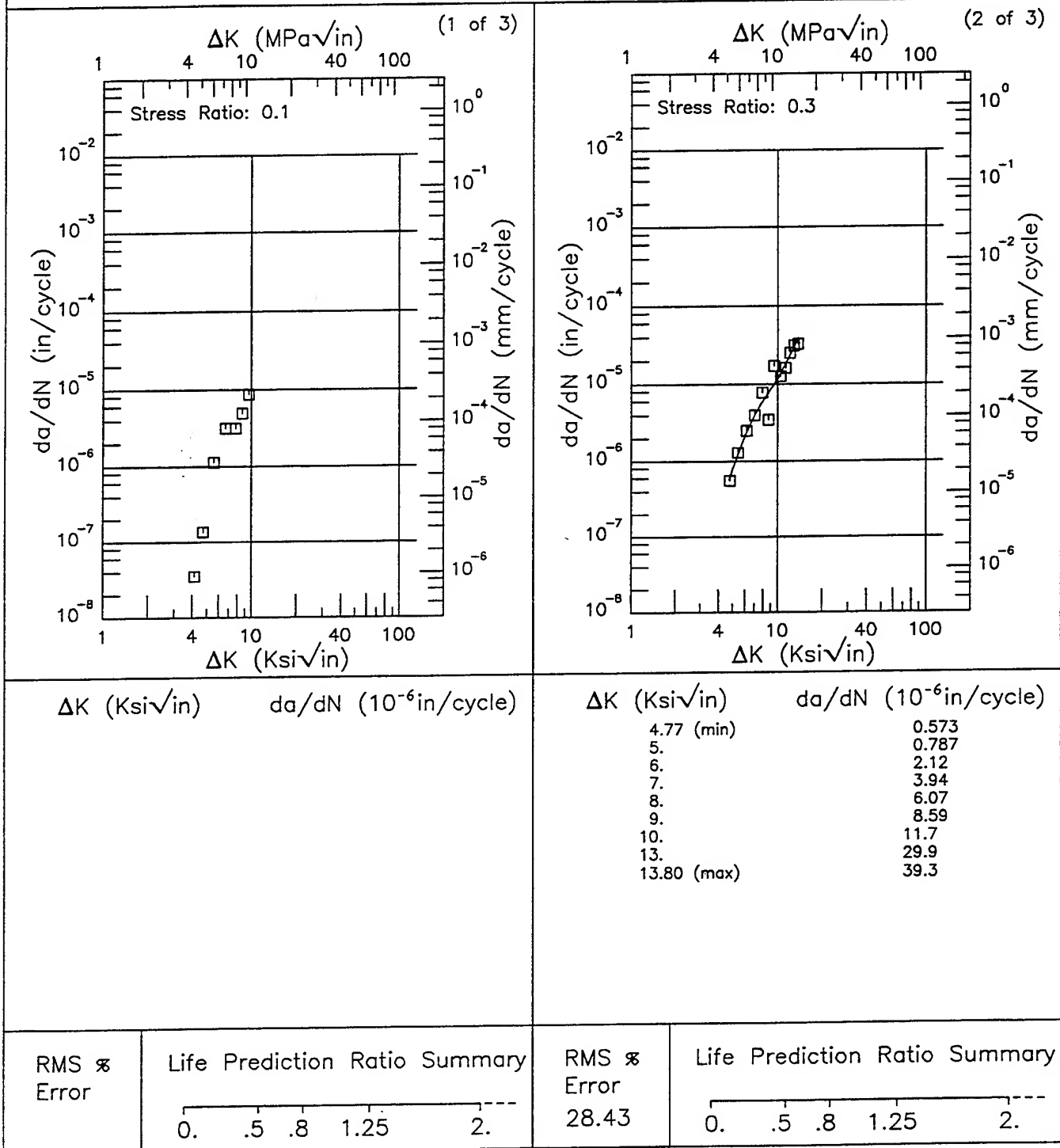


Figure 7.5.3.1.72

Condition/Ht: T62
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 1 Hz
 Environment: H.H.A.; RT

Yield Strength: 58.2 ksi
 Ult. Strength: 73.5 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

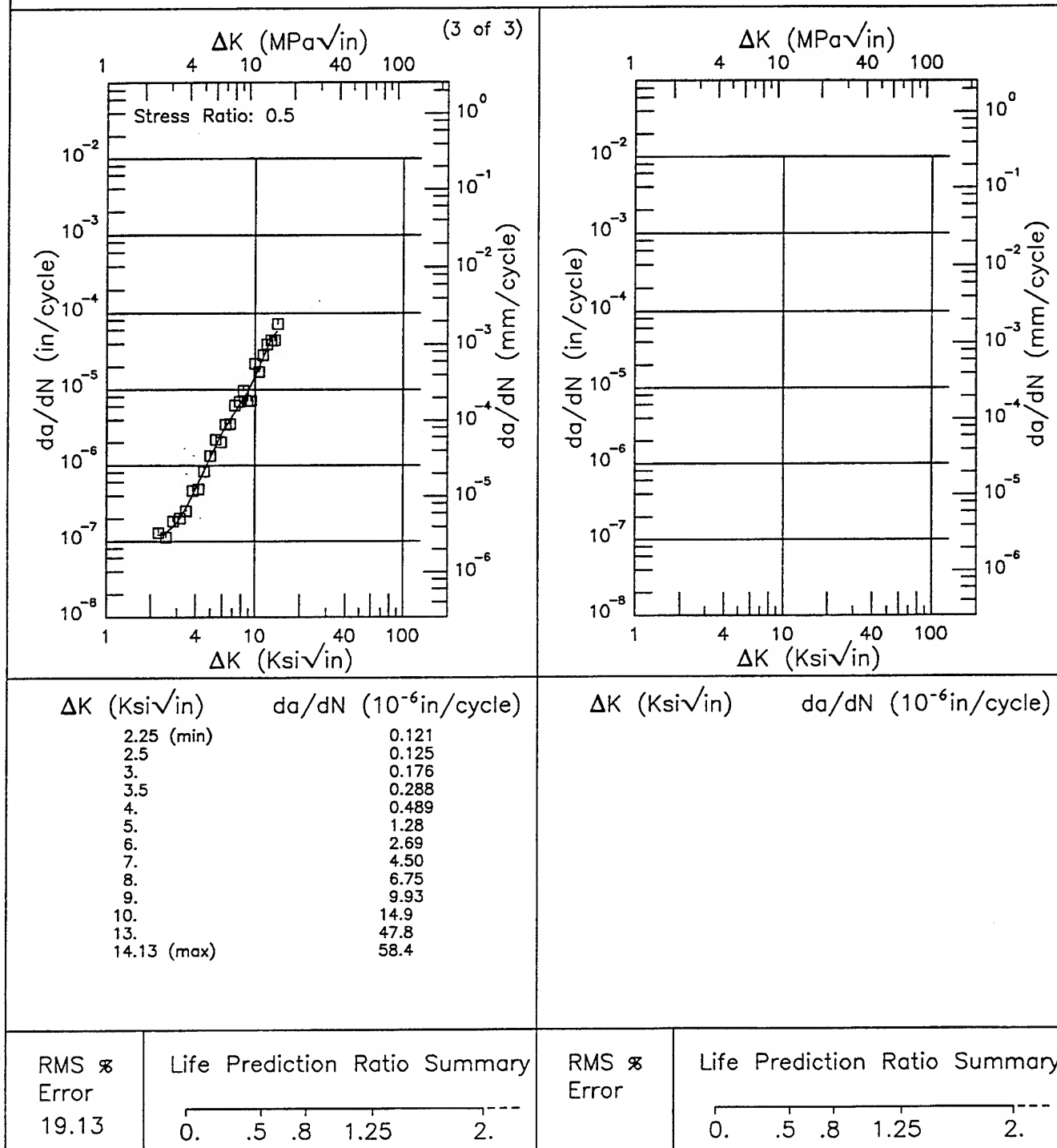


Figure 7.5.3.1.72 (Concluded)

R

2024

Condition/Ht: T81

Form: 0.13 in. Sheet

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 6 Hz

Environment: DRY AIR; RT

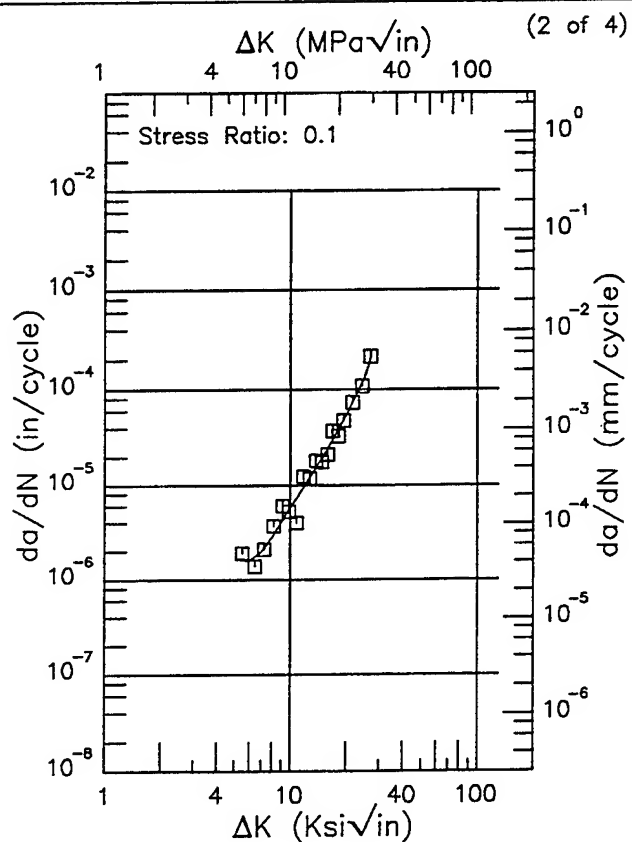
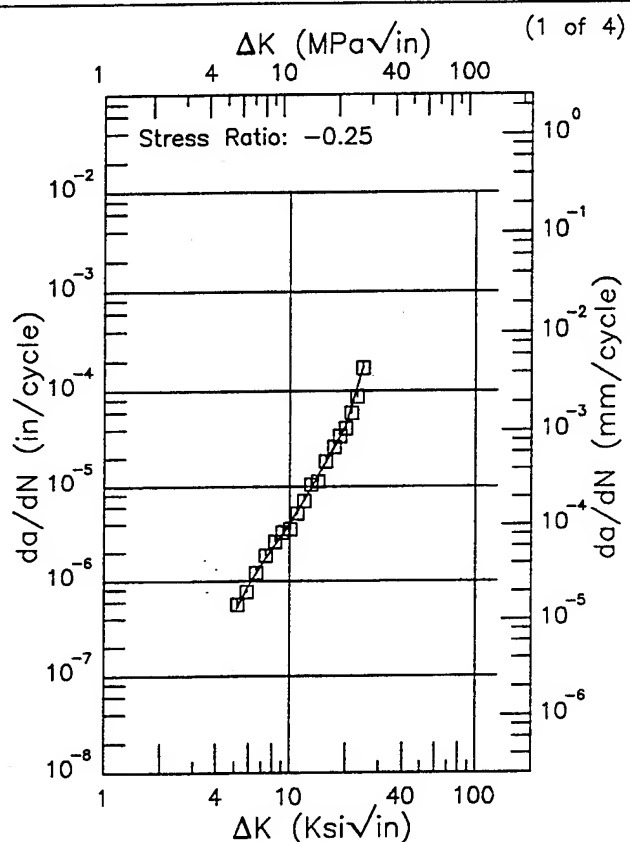
Yield Strength: 65.3 ksi

Ult. Strength: 70.9 ksi

Specimen Thk: 0.125 in.

Specimen Width: 6 in.

Ref: GD004



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
5.19 (min)	0.517
6.	0.906
7.	1.49
8.	2.17
9.	3.00
10.	4.01
13.	9.31
16.	19.9
20.	43.6
24.54 (max)	168.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
5.48 (min)	1.60
6.	1.59
7.	1.97
8.	2.79
9.	4.07
10.	5.81
13.	12.9
16.	24.2
20.	55.0
25.	129.
26.90 (max)	215.

RMS %
Error

7.66

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
Error

20.55

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.5.3.1.73

Condition/Ht: T81
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength: 65.3 ksi
 Ult. Strength: 70.9 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

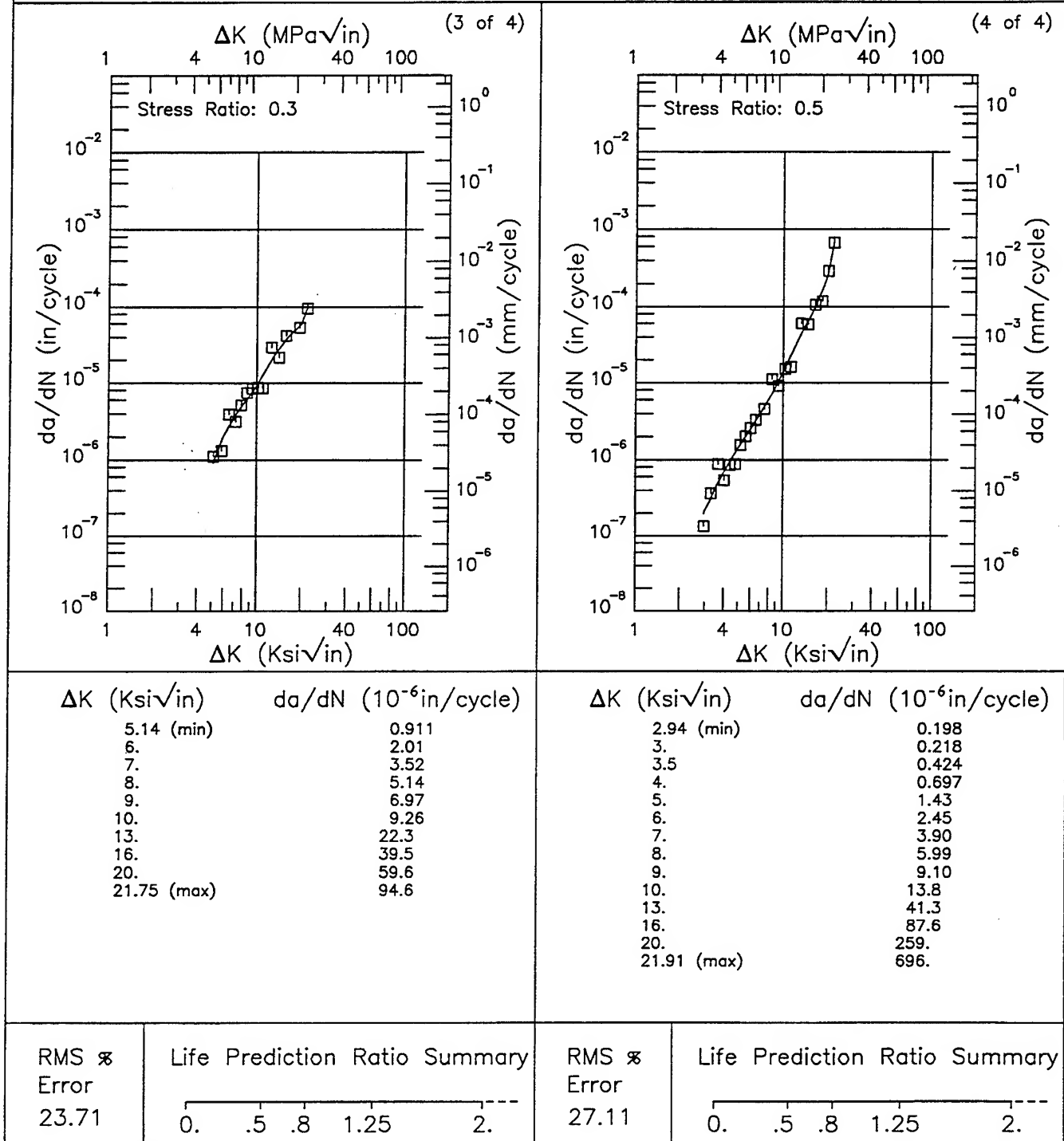


Figure 7.5.3.1.73 (Concluded)

R

2024

Condition/Ht: T81

Form: 0.13 in. Sheet

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 1 Hz

Environment: H.H.A.; RT

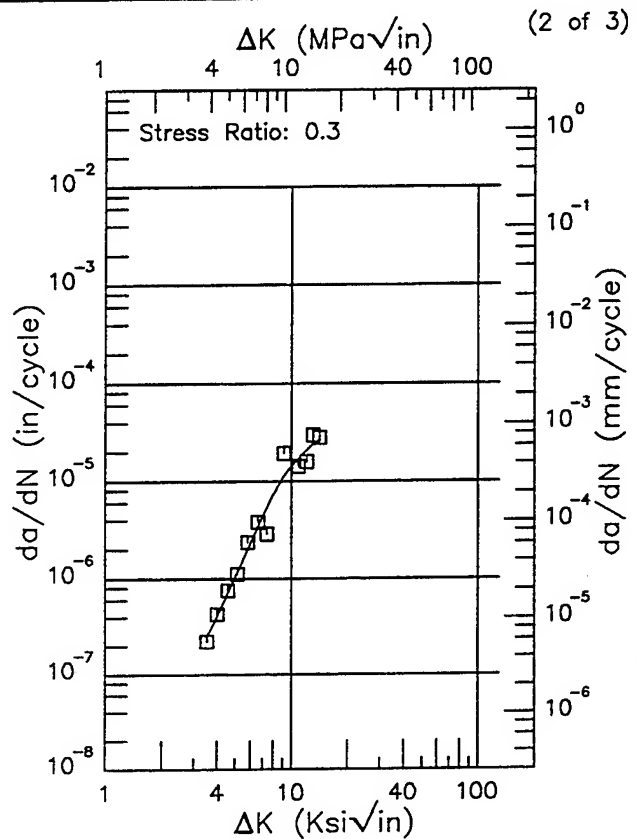
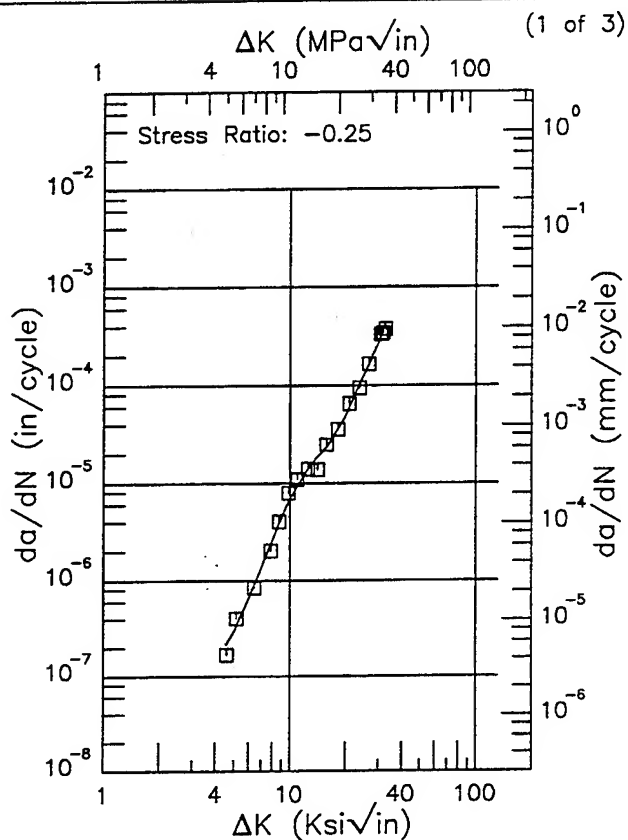
Yield Strength: 65.3 ksi

Ult. Strength: 70.9 ksi

Specimen Thk: 0.125 in.

Specimen Width: 6 in.

Ref: GD004



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
4.56 (min)	0.214
5.	0.297
6.	0.650
7.	1.36
8.	2.61
9.	4.50
10.	7.00
13.	15.6
16.	24.4
20.	49.2
25.	130.
30.	275.
32.56 (max)	415.

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
3.52 (min)	0.254
4.	0.407
5.	1.04
6.	2.30
7.	4.39
8.	7.32
9.	10.8
10.	14.5
13.	23.9
14.10 (max)	26.2

RMS %
Error
13.29

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
Error
27.92

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.5.3.1.74

Condition/Ht: T81
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 Hz
 Environment: H.H.A.; RT

Yield Strength: 65.3 ksi
 Ult. Strength: 70.9 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

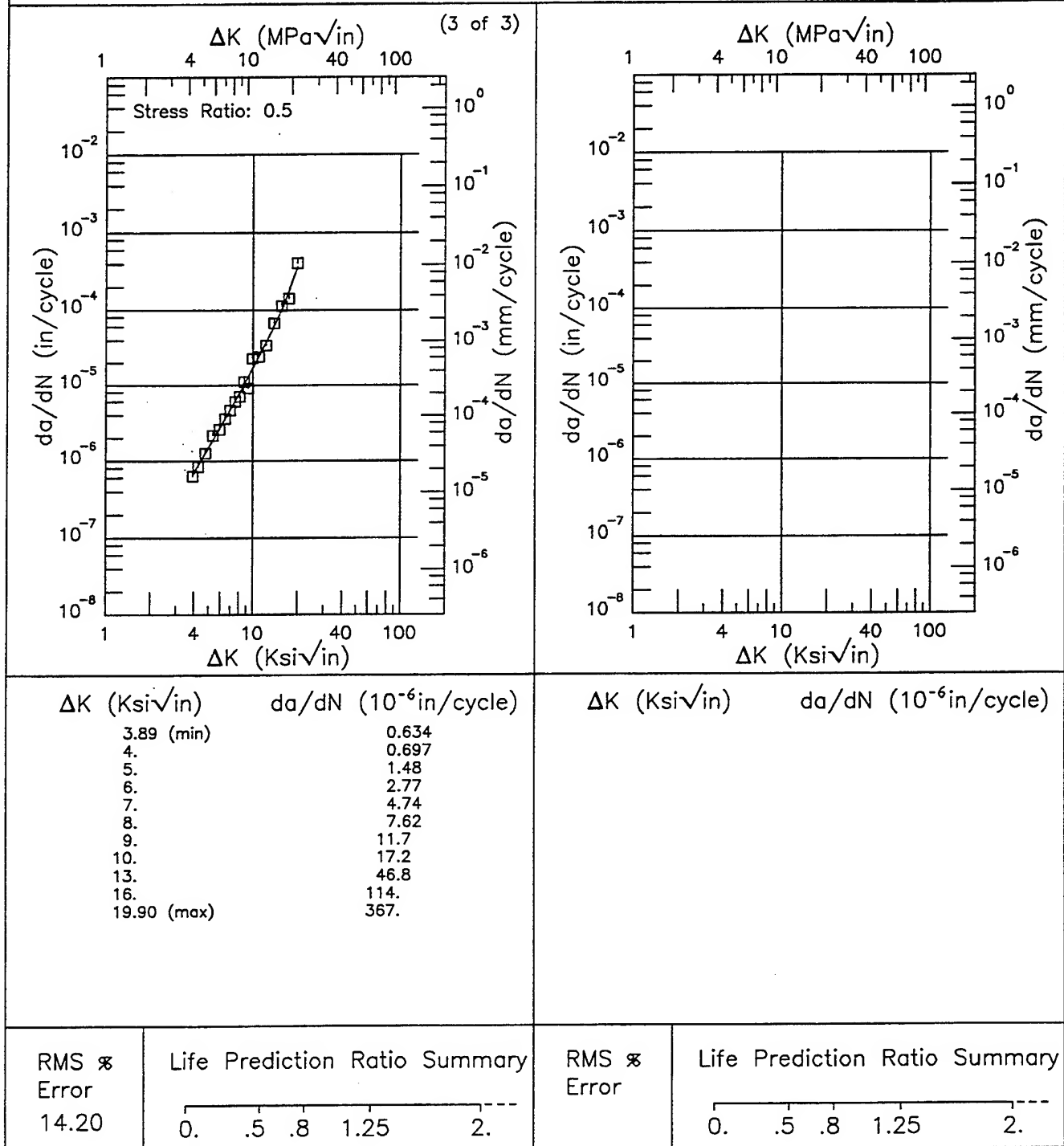


Figure 7.5.3.1.74 (Concluded)

R

2024

Condition/Ht: T81

Form: 0.13 in. Sheet

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 1 Hz

Environment: S.T.W.; RT

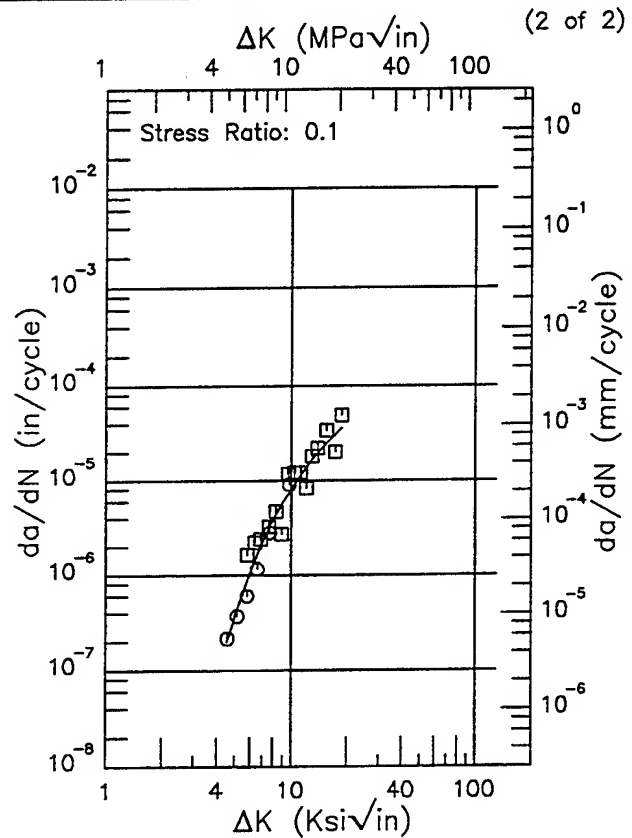
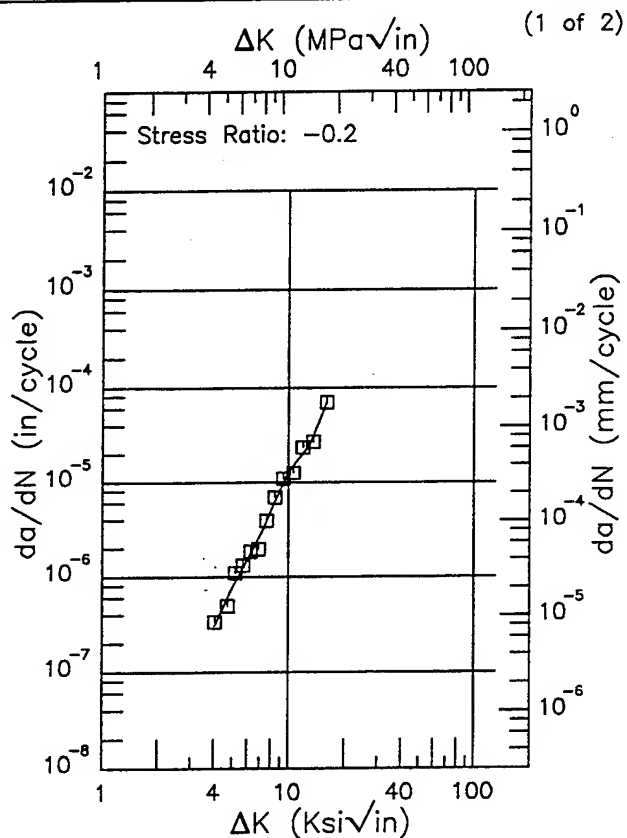
Yield Strength: 65.3 ksi

Ult. Strength: 70.9 ksi

Specimen Thk: 0.125 in.

Specimen Width: 6 in.

Ref: GD004



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
4.03 (min)	0.308
5.	0.767
6.	1.48
7.	2.68
8.	4.89
9.	8.35
10.	12.7
13.	25.2
15.95 (max)	70.0

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
4.55 (min)	0.196
5.	0.365
6.	1.04
7.	2.19
8.	3.82
9.	5.86
10.	8.25
13.	16.7
16.	26.4
18.76 (max)	36.2

RMS %
Error
14.16

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS %
Error
35.93

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

Figure 7.5.3.1.75

R

2024

Condition/Ht: T81

Form: 0.04 in. Sheet

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 2 Hz

Environment: LAB AIR; RT

Yield Strength: 64.4 ksi

Ult. Strength: 70.5 ksi

Specimen Thk: 0.04 in.

Specimen Width: 9.7 in.

Ref: 86734

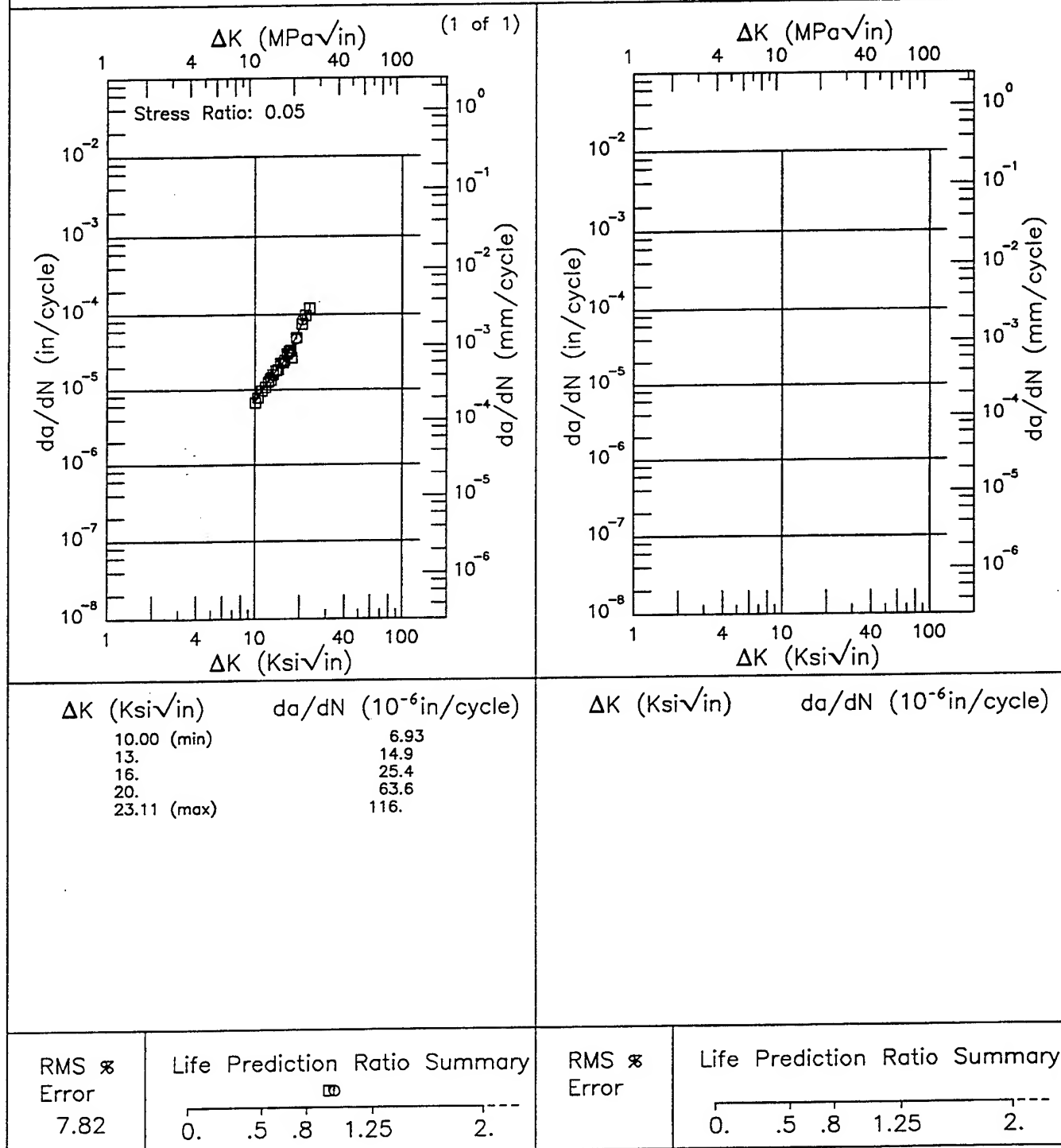


Figure 7.5.3.1.77

Condition/Ht: T81
 Form: 0.03 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 2 Hz
 Environment: LAB AIR; RT

Yield Strength: 64.4 ksi
 Ult. Strength: 70.5 ksi
 Specimen Thk: 0.032 in.
 Specimen Width: 6 in.
 Ref: 86734

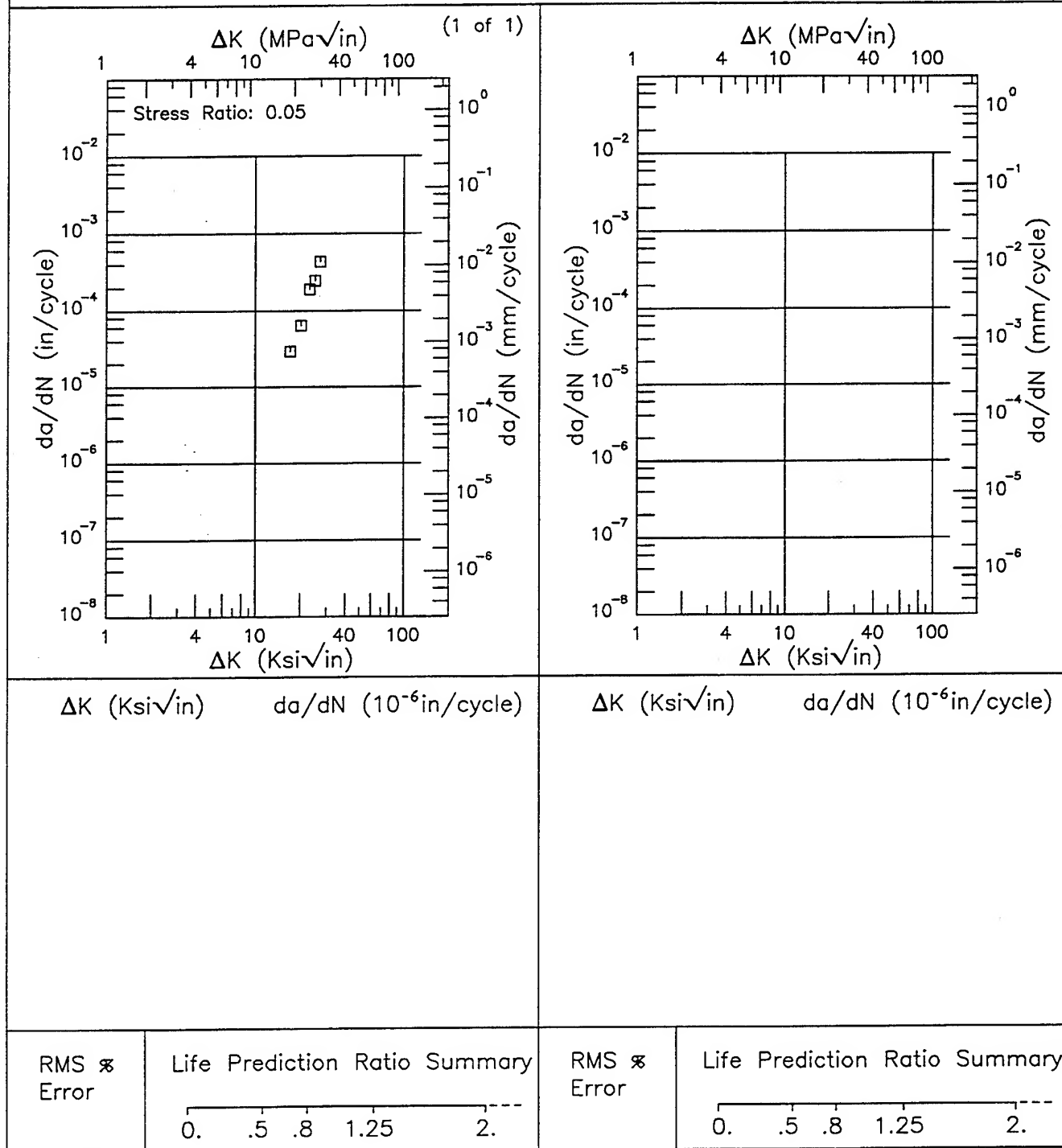
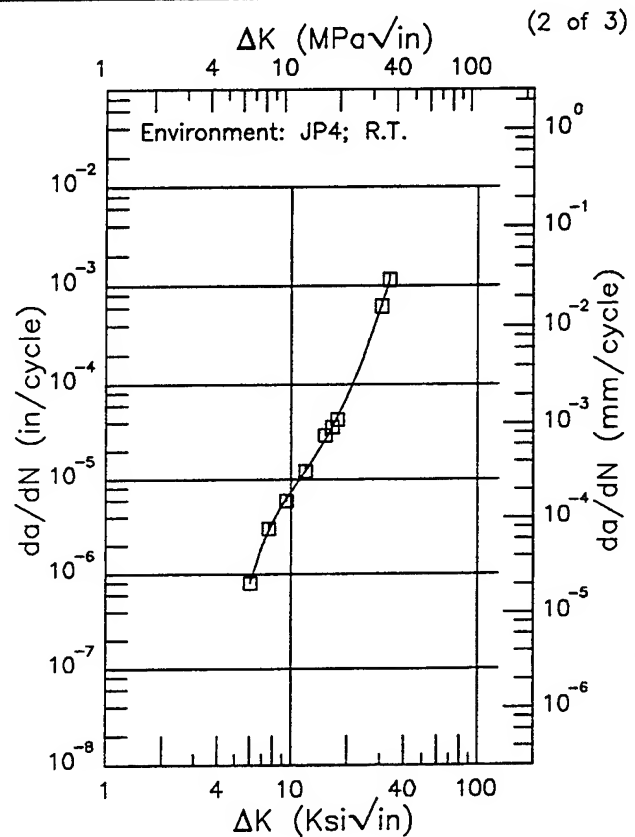
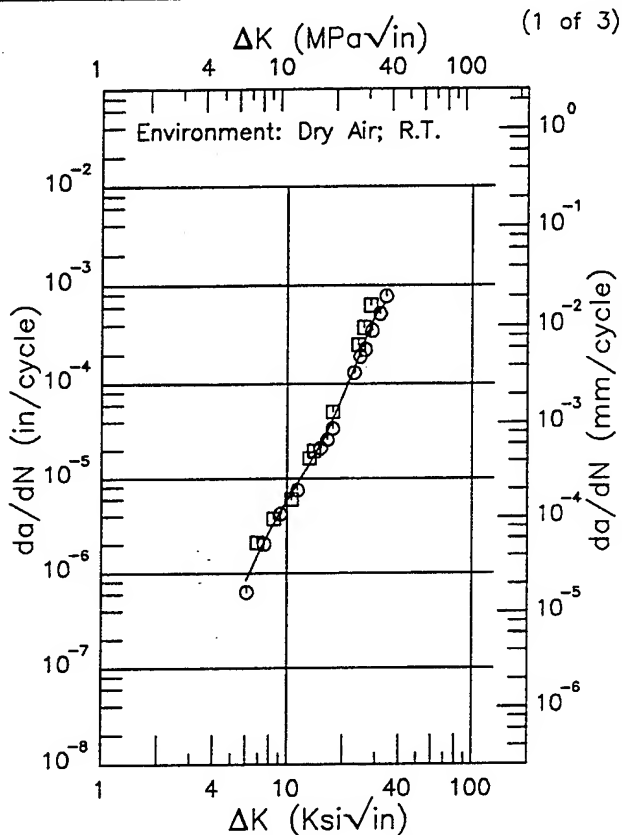


Figure 7.5.3.1.78

E 2024

Condition/Ht: T81
 Form: 0.1 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: 0.08
 Frequency: 1 Hz

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.099 - 0.101 in.
 Specimen Width: 23.8 - 23.82 in.
 Ref: 86575



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.04 (min)	0.847
7.	1.65
8.	2.77
9.	4.18
10.	5.91
13.	13.7
16.	28.5
20.	74.4
25.	232.
30.	505.
34.01 (max)	677.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.04 (min)	0.836
7.	1.95
8.	3.53
9.	5.42
10.	7.52
13.	15.7
16.	30.4
20.	75.1
25.	216.
30.	572.
33.51 (max)	1132.

RMS %
 Error
 23.66

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error
 5.62

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.5.3.1.79

Condition/Ht: T81
 Form: 0.1 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: 0.08
 Frequency: 1 Hz

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.099 - 0.101 in.
 Specimen Width: 23.8 - 23.82 in.
 Ref: 86575

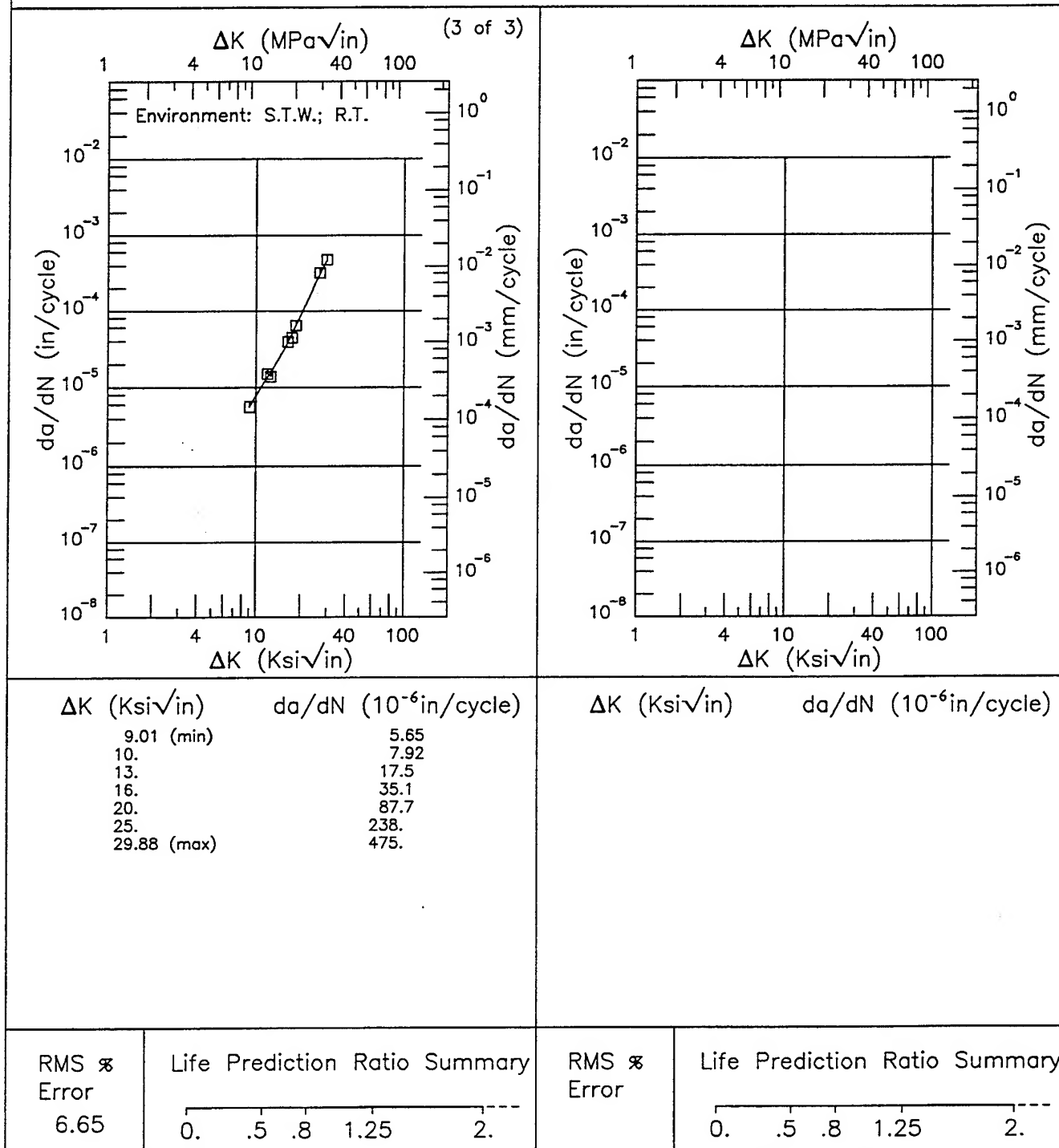


Figure 7.5.3.1.79 (Concluded)

Condition/Ht: T81
 Form: 0.1 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.097 - 0.1 in.
 Specimen Width: 23.66 - 23.68 in.
 Ref: 86575

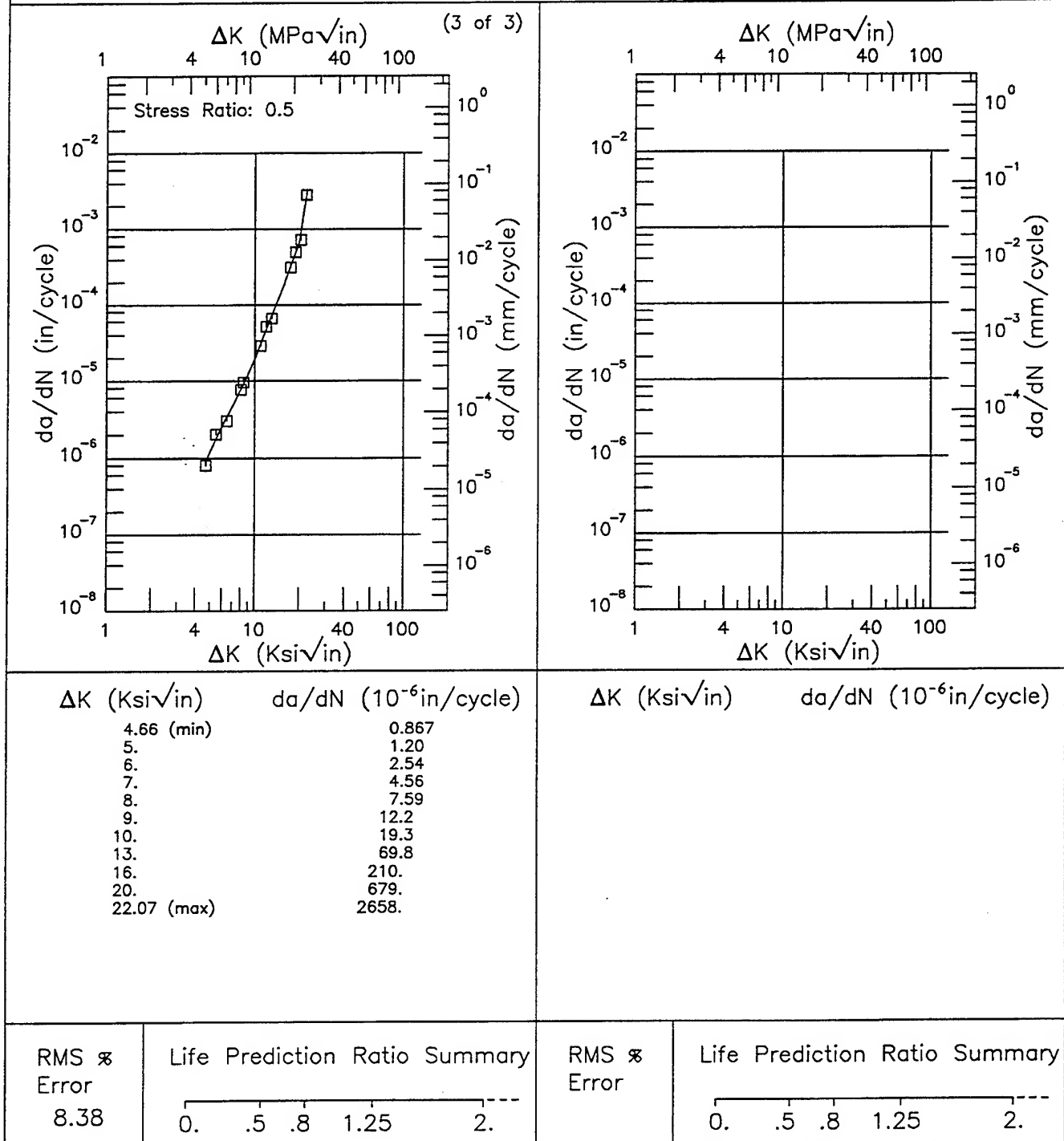


Figure 7.5.3.1.80 (Concluded)

R

2024

Condition/Ht: T81
 Form: 0.1 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.1 - 0.101 in.
 Specimen Width: 23.8 - 23.82 in.
 Ref: 86575

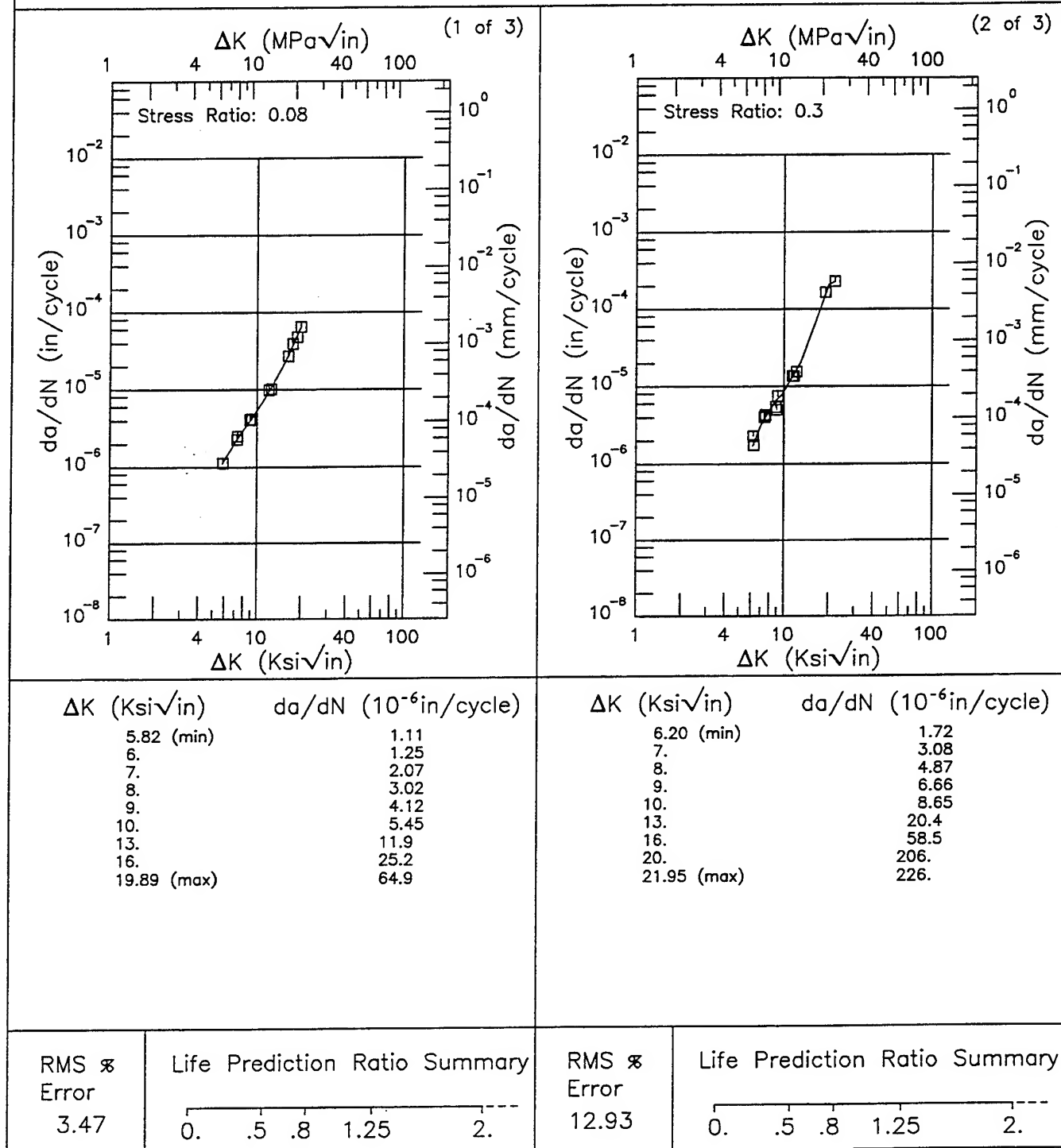


Figure 7.5.3.1.81

Condition/Ht: T81
 Form: 0.1 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.1 - 0.101 in.
 Specimen Width: 23.8 - 23.82 in.
 Ref: 86575

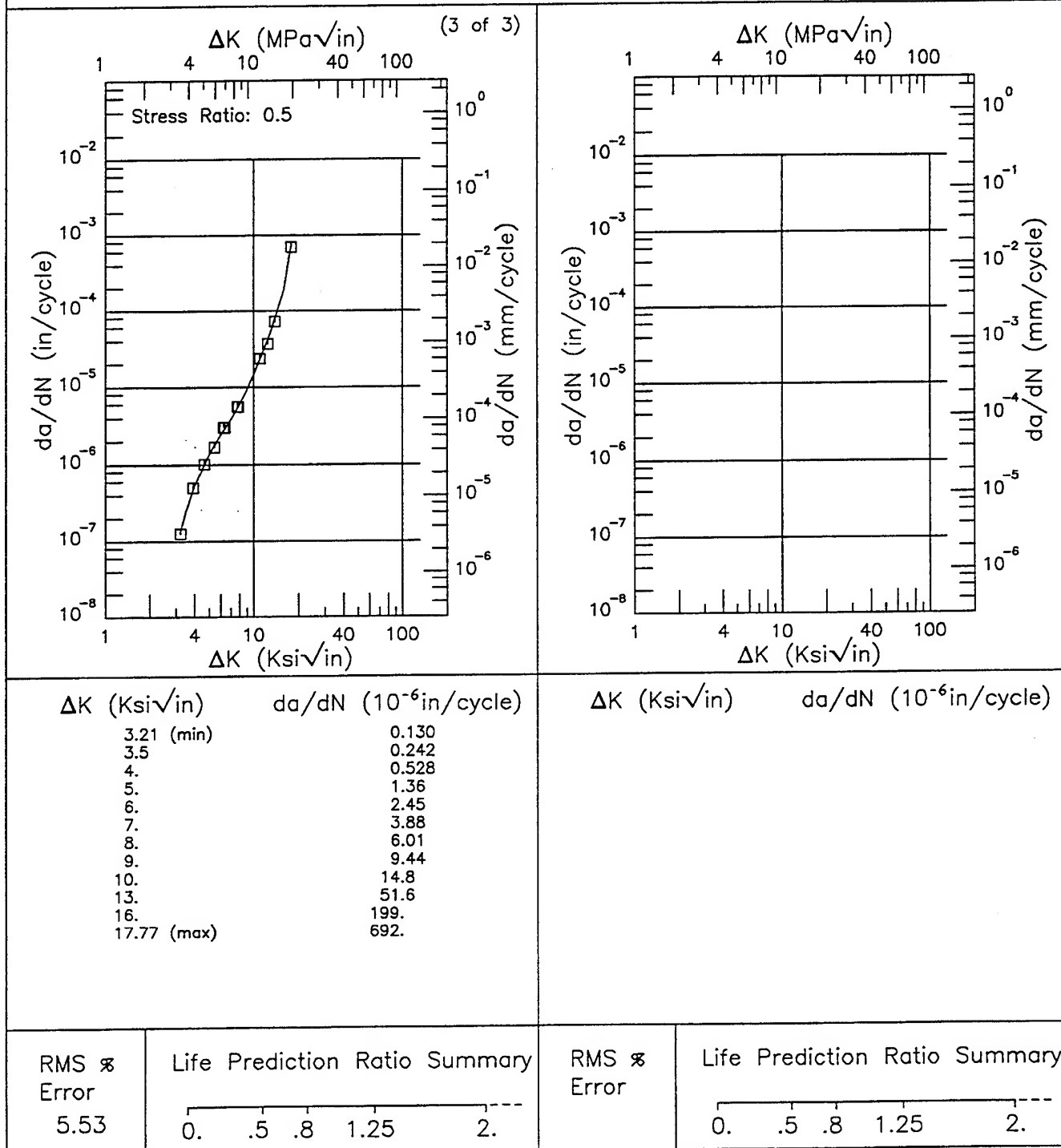


Figure 7.5.3.1.81 (Concluded)

E

2024

Condition/Ht: T81

Form: 0.1 in. Sheet

Specimen Type: CCP (max load specified)

Orientation: L-T

Stress Ratio: 0.08

Frequency: 1 Hz

Yield Strength:

Ult. Strength:

Specimen Thk: 0.098 - 0.099 in.

Specimen Width: 23.66 - 23.67 in.

Ref: 86575

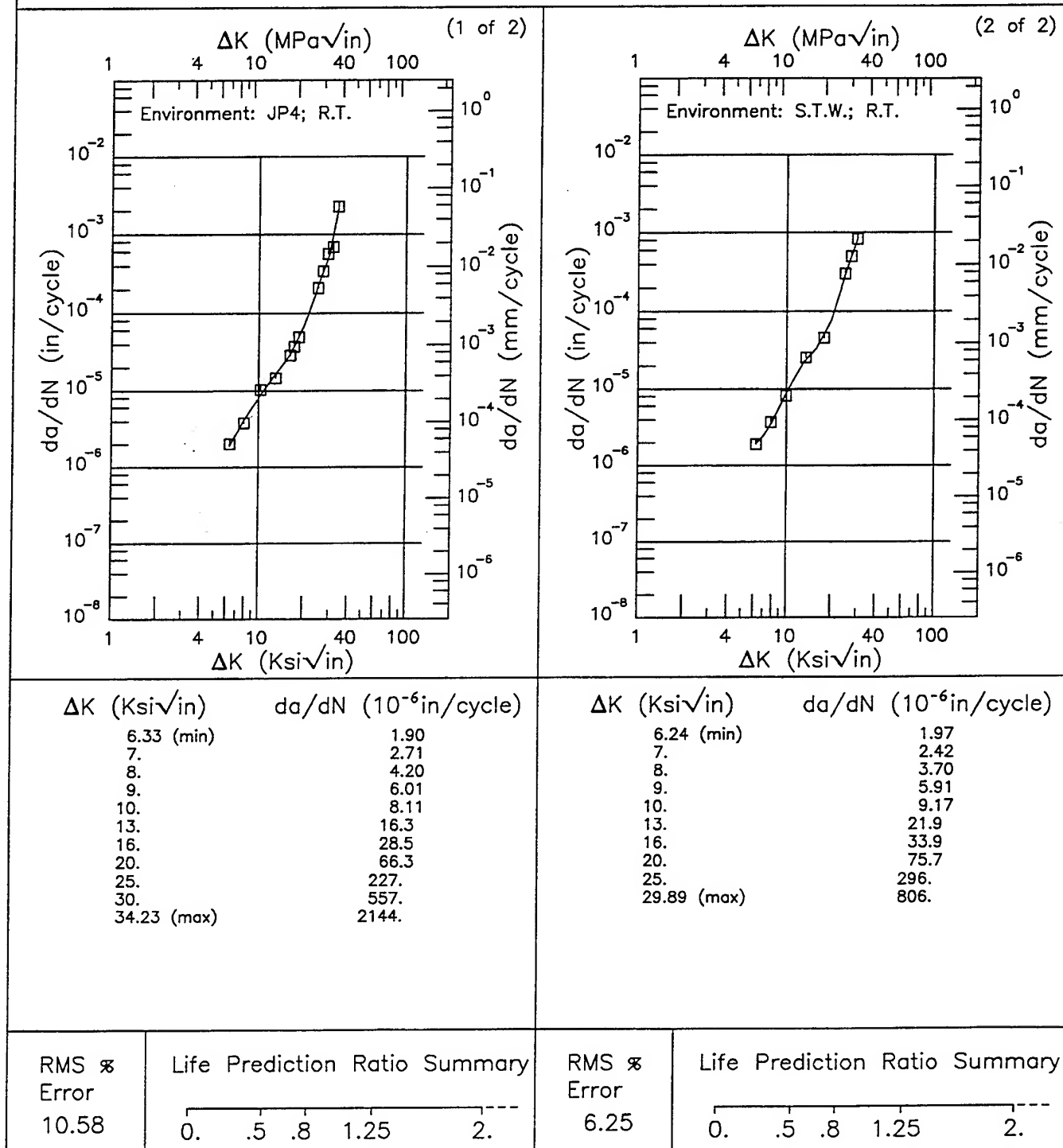


Figure 7.5.3.1.82

Condition/Ht: T81
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Stress Ratio: 0.1
 Environment: H.H.A.; RT

Yield Strength: 65.3 ksi
 Ult. Strength: 70.9 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

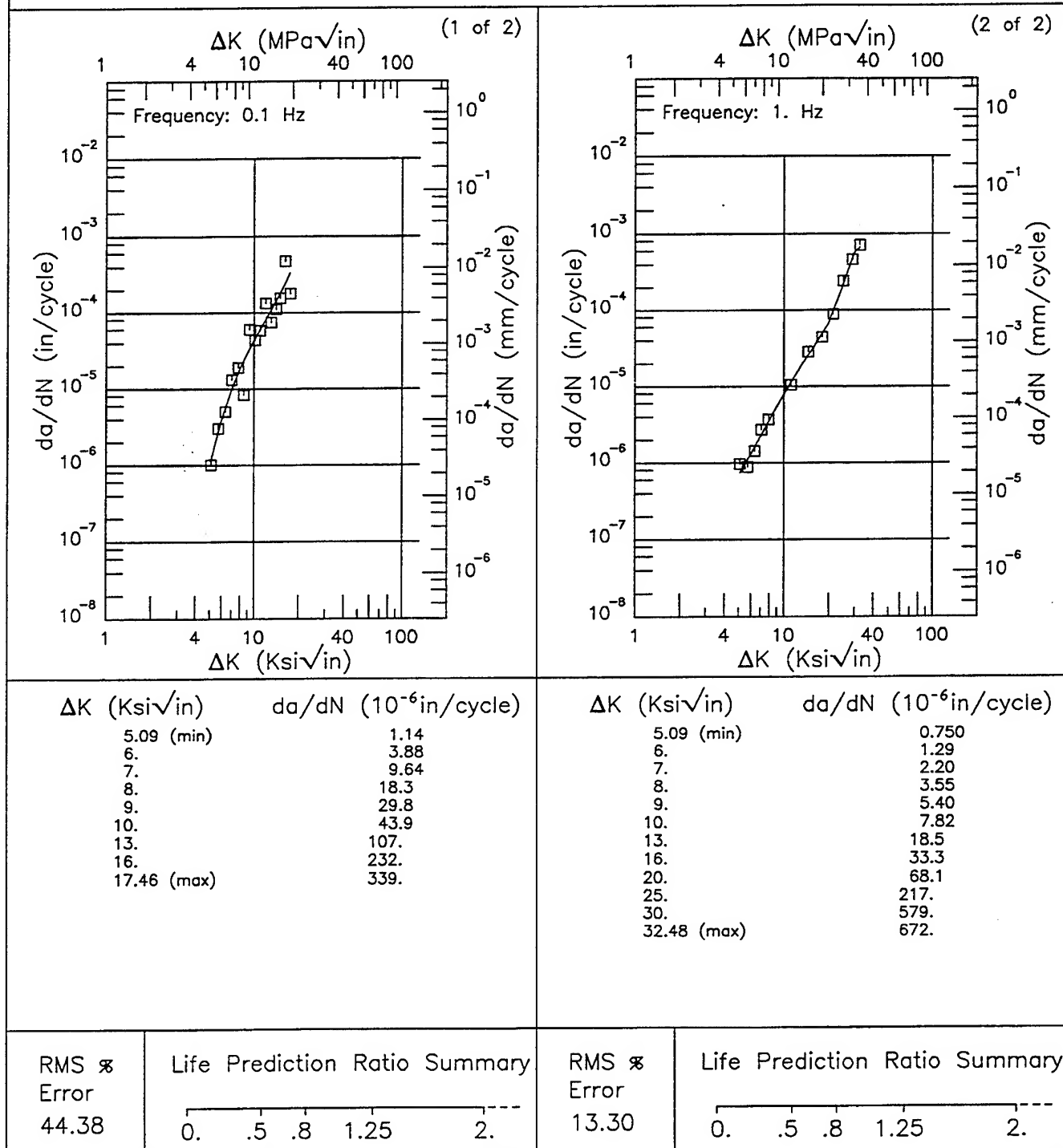


Figure 7.5.3.1.83

R

2024

Condition/Ht: T81
Form: 0.07 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L-T
Frequency: 2 Hz
Environment: LAB AIR; RT

Yield Strength: 64.4 ksi
Ult. Strength: 70.5 ksi
Specimen Thk: 0.065 in.
Specimen Width: 4 in.
Ref: 86734

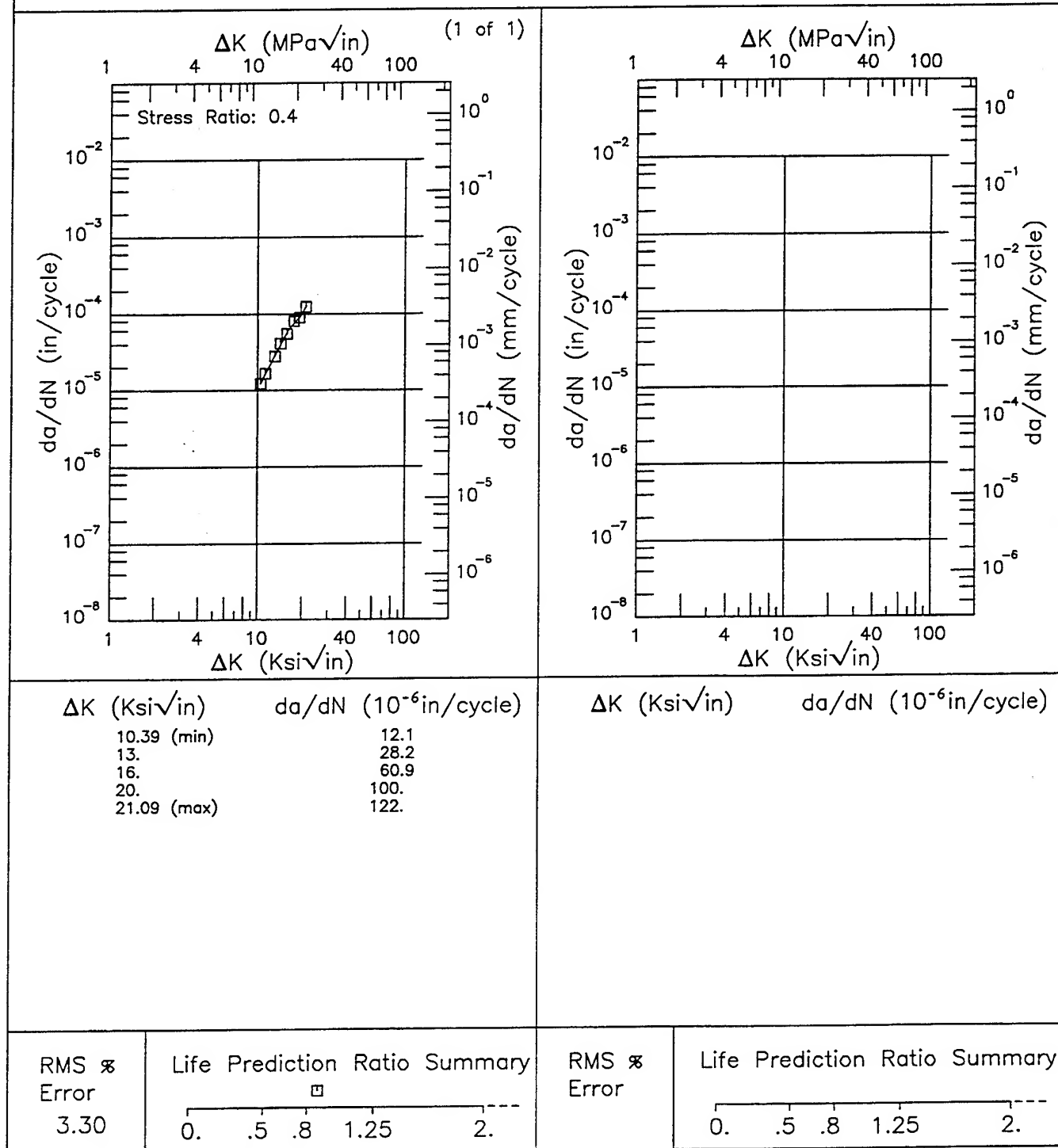


Figure 7.5.3.1.84

Condition/Ht: T81
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength: 65.8 ksi
 Ult. Strength: 73.1 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

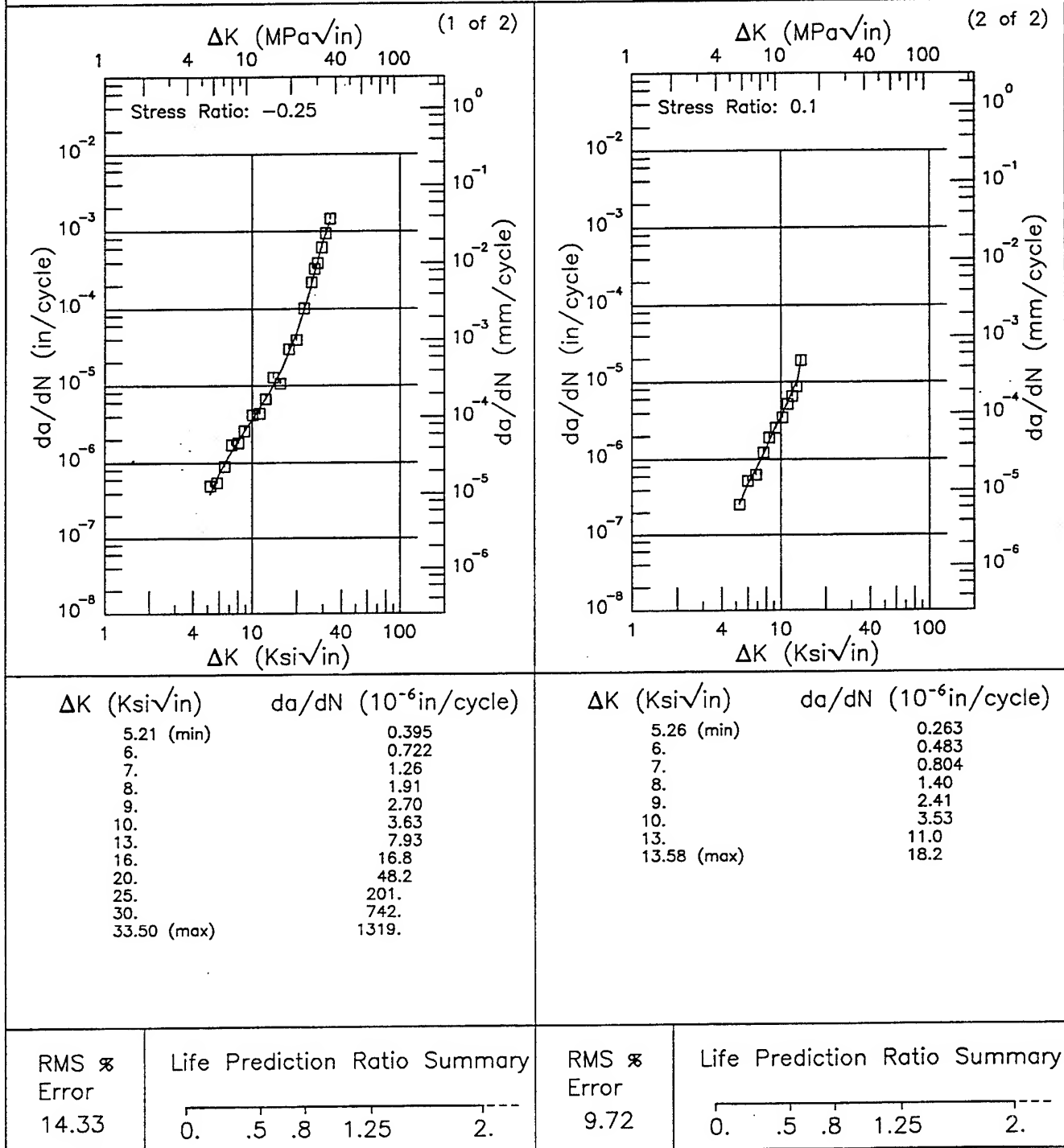
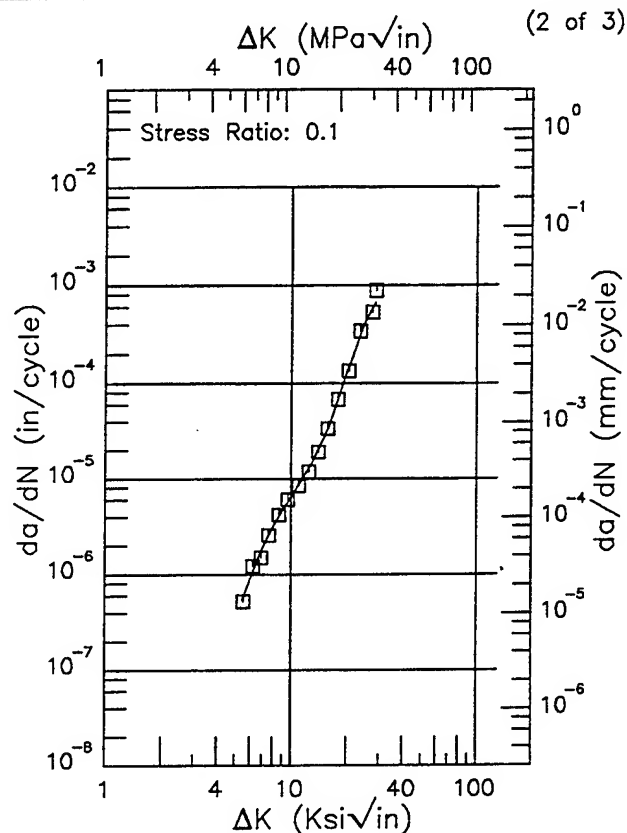
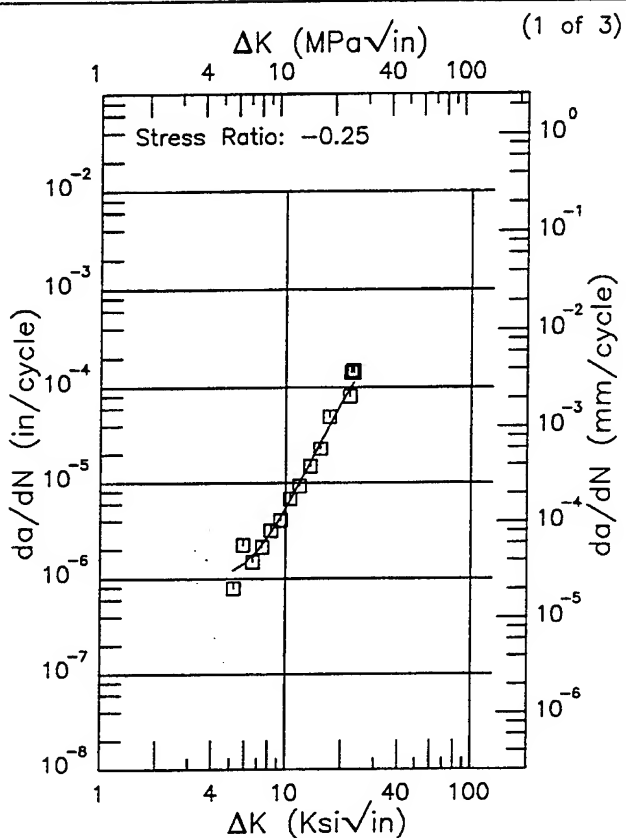


Figure 7.5.3.1.85

R 2024

Condition/Ht: T81
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 1 Hz
 Environment: H.H.A.; RT

Yield Strength: 65.8 ksi
 Ult. Strength: 73.1 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.22 (min)	1.23
6.	1.44
7.	1.94
8.	2.71
9.	3.83
10.	5.40
13.	13.9
16.	30.5
20.	69.5
23.07 (max)	113.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.53 (min)	0.548
6.	0.881
7.	1.85
8.	3.11
9.	4.62
10.	6.41
13.	14.6
16.	34.9
20.	131.
25.	415.
28.46 (max)	675.

RMS %
 Error
 24.89

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error
 11.36

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.5.3.1.86

Condition/Ht: T81
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 1 Hz
 Environment: H.H.A.; RT

Yield Strength: 65.8 ksi
 Ult. Strength: 73.1 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

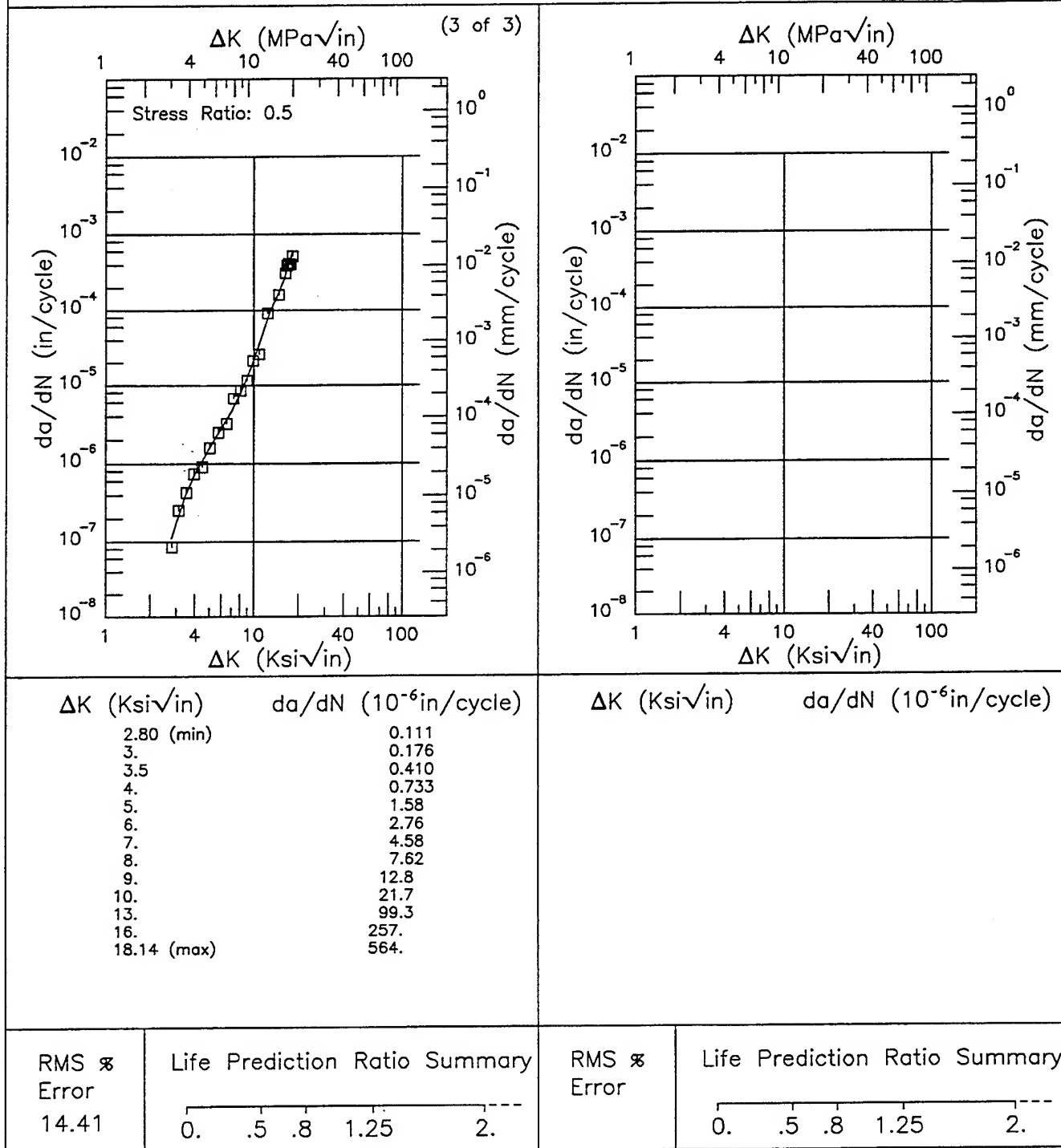
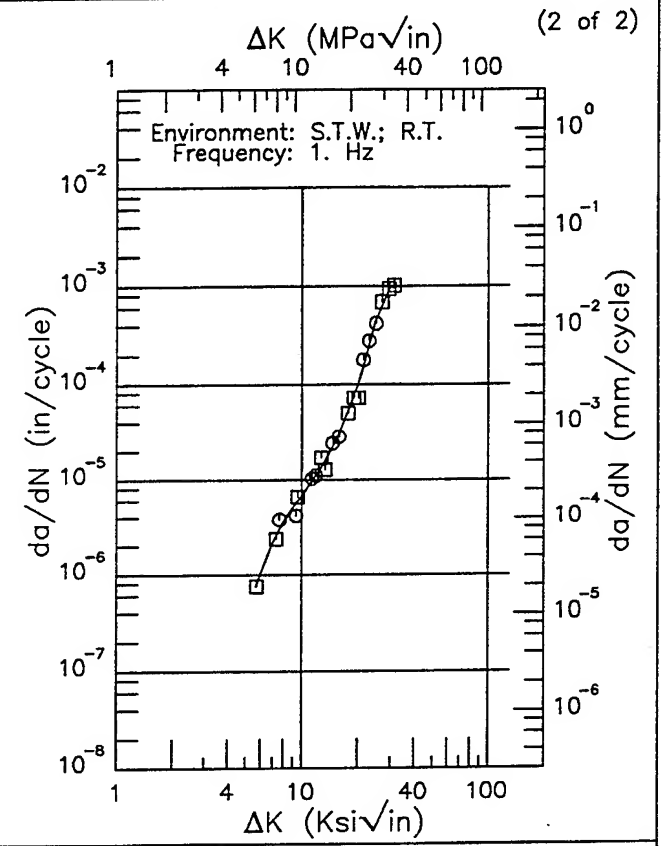
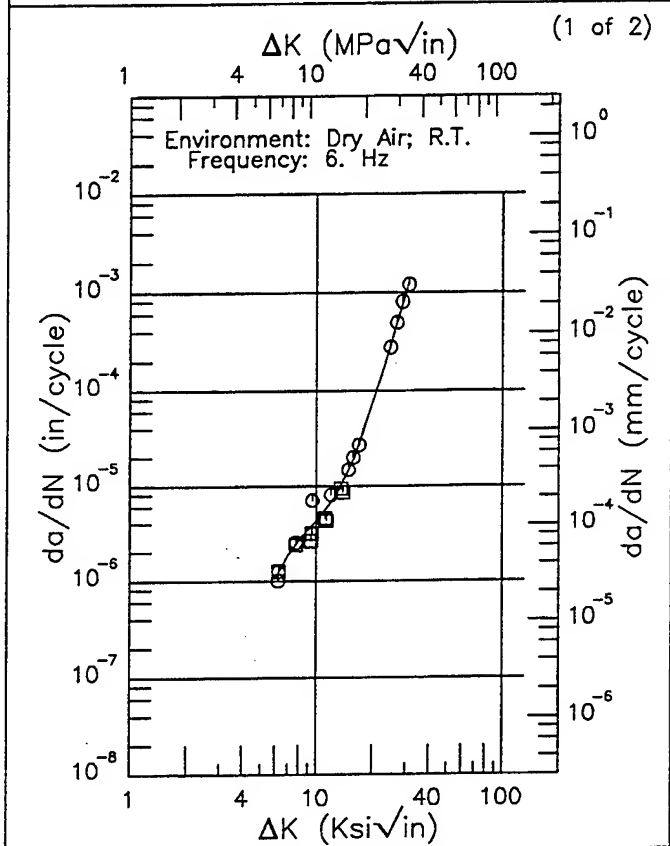


Figure 7.5.3.1.86 (Concluded)

EF 2024

Condition/Ht: T81
 Form: 0.1 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Stress Ratio: 0.08

Yield Strength: 67 ksi
 Ult. Strength: 73 ksi
 Specimen Thk: 0.099 - 0.1 in.
 Specimen Width: 23.81 - 23.91 in.
 Ref: 86575



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.20 (min)	1.19
7.	1.85
8.	2.67
9.	3.46
10.	4.30
13.	8.41
16.	20.3
20.	74.5
25.	306.
30.	988.
31.13 (max)	1267.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.70 (min)	0.761
6.	1.03
7.	2.16
8.	3.55
9.	5.11
10.	6.85
13.	14.3
16.	31.0
20.	98.0
25.	451.
30.	990.
31.22 (max)	957.

RMS % Error	Life Prediction Ratio Summary
22.92	

RMS % Error	Life Prediction Ratio Summary
15.19	

Figure 7.5.3.1.87

Condition/Ht: T81
 Form: 0.13 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 65.8 ksi
 Ult. Strength: 73.1 ksi
 Specimen Thk: 0.125 in.
 Specimen Width: 6 in.
 Ref: GD004

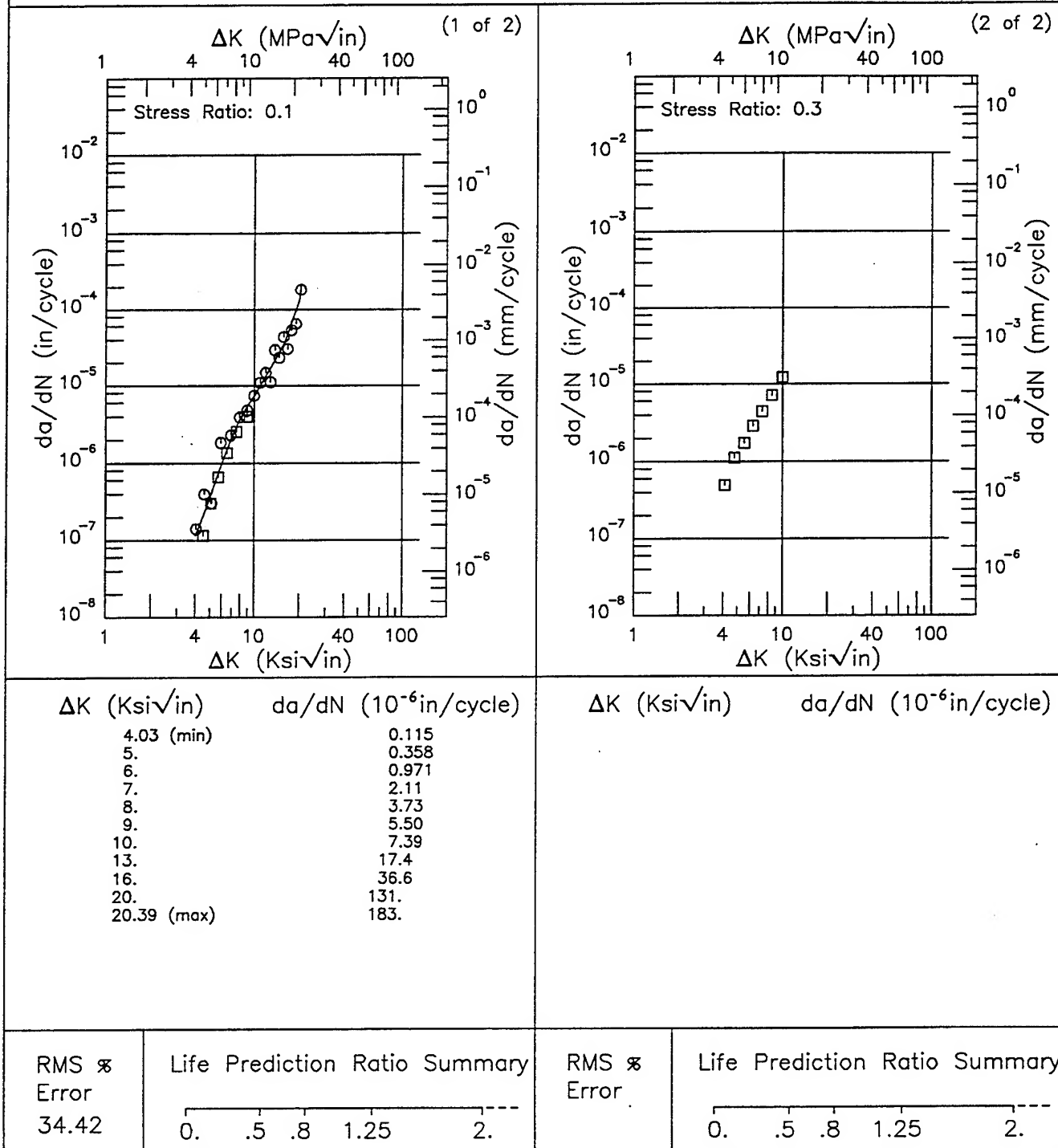
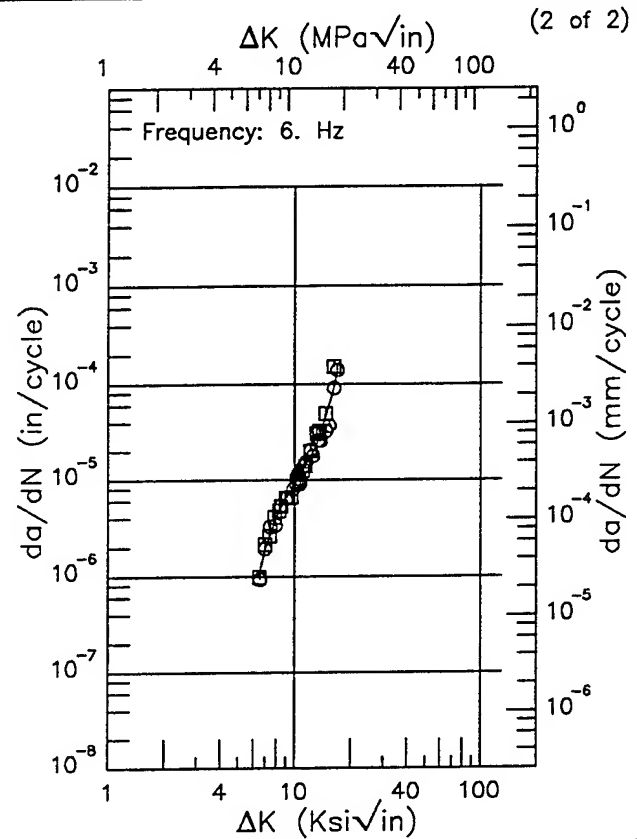
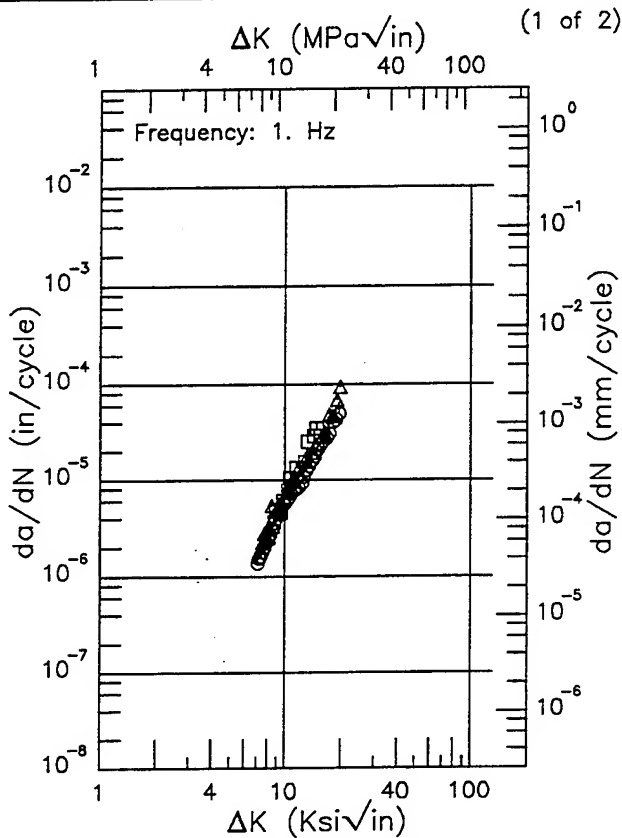


Figure 7.5.3.1.88

F 2024

Condition/Ht: T851
 Form: 3 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.08
 Environment: DRY AIR; RT

Yield Strength: 51 - 66 ksi
 Ult. Strength: 71 - 74 ksi
 Specimen Thk: 0.494 - 1 in.
 Specimen Width: 5.99 - 6.01 in.
 Ref: 88579;85837



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
7.09 (min)	1.40
8.	2.65
9.	4.36
10.	6.36
13.	14.6
16.	27.9
19.69 (max)	66.3

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.45 (min)	1.02
7.	1.90
8.	4.06
9.	6.55
10.	9.20
13.	21.5
16.	77.7
16.92 (max)	134.

RMS %
 Error
 21.01

Life Prediction Ratio Summary

RMS %
 Error
 17.88

Life Prediction Ratio Summary

Figure 7.5.3.1.89

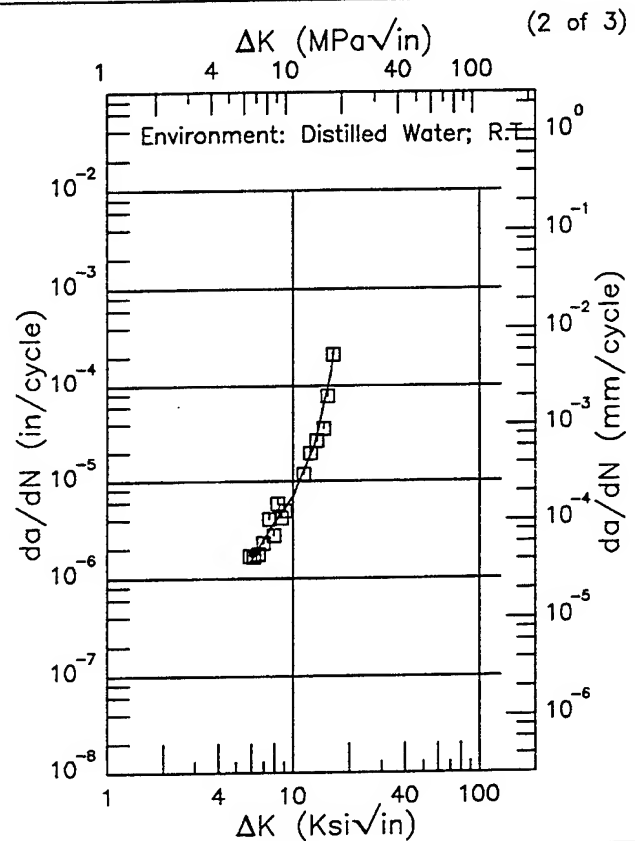
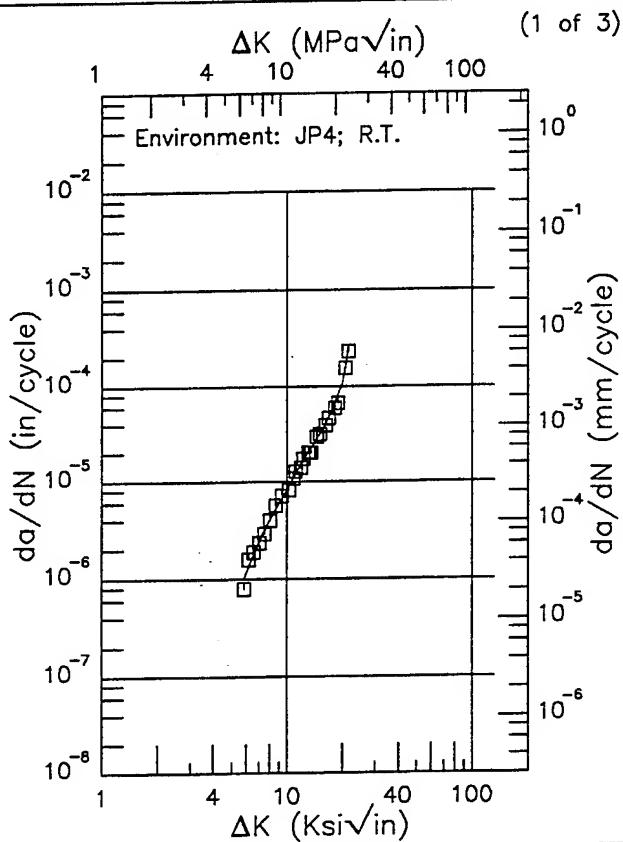
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2024

E

Condition/Ht: T851
Form: 3 in. Plate
Specimen Type: CT
Orientation: L-T
Stress Ratio: 0.08
Frequency: 1 Hz

Yield Strength: 59 - 66 ksi
Ult. Strength: 71 - 74 ksi
Specimen Thk: 0.99 - 1 in.
Specimen Width: 5.99 - 6 in.
Ref: 88579



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.85 (min)	1.00
6.	1.15
7.	2.39
8.	3.98
9.	5.95
10.	8.43
13.	20.1
16.	39.0
20.	108.
21.48 (max)	256.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.87 (min)	1.45
6.	1.54
7.	2.47
8.	3.72
9.	5.18
10.	7.03
13.	23.6
16.	136.
16.35 (max)	224.

RMS %
Error
9.32

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
Error
20.57

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.5.3.1.90

Condition/Ht: T851
 Form: 3 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.08
 Frequency: 1 Hz

Yield Strength: 59 – 66 ksi
 Ult. Strength: 71 – 74 ksi
 Specimen Thk: 0.99 – 1 in.
 Specimen Width: 5.99 – 6 in.
 Ref: 88579

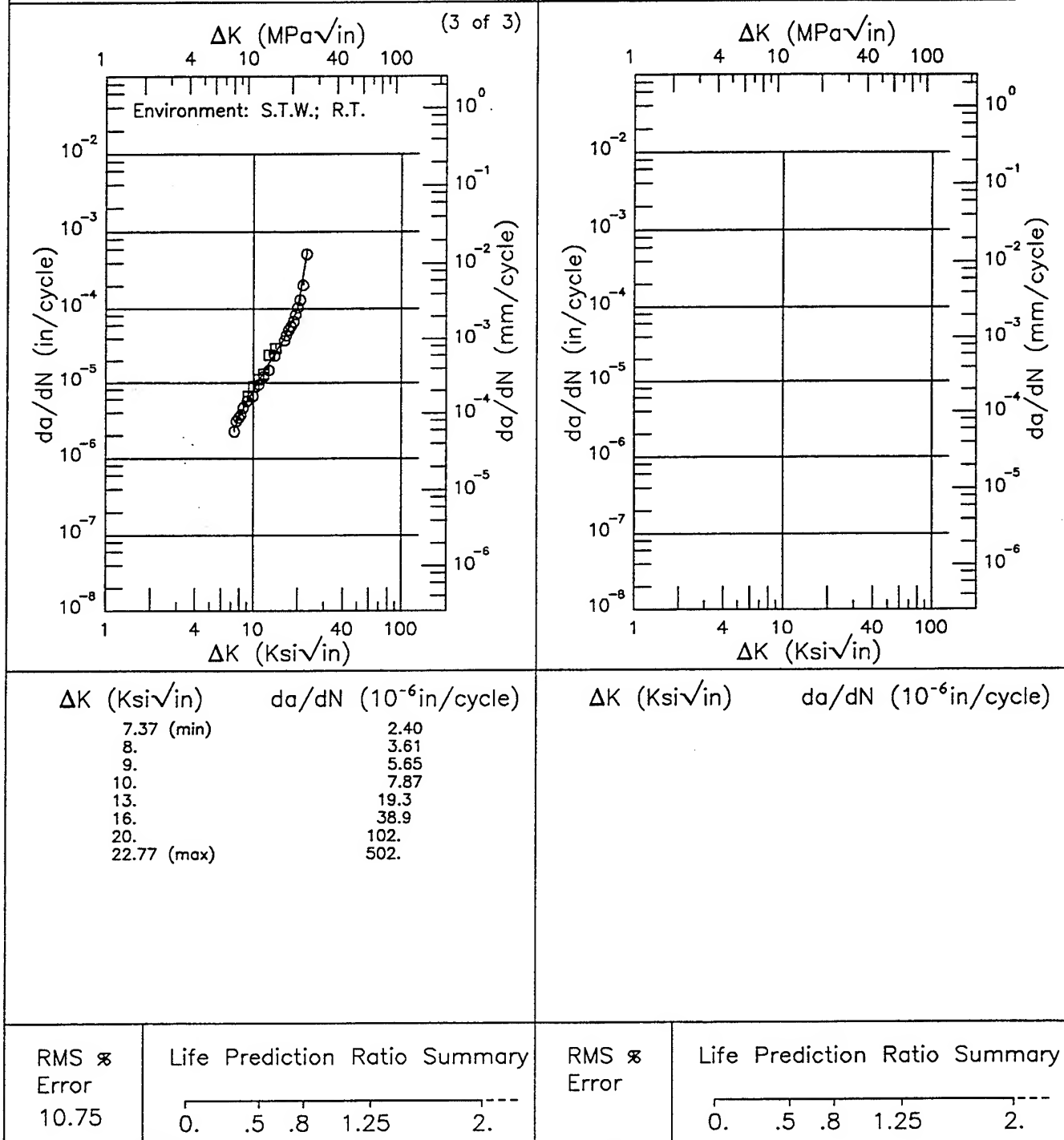


Figure 7.5.3.1.90 (Concluded)

R

2024

Condition/Ht: T851
 Form: 3 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 Hz
 Environment: DRY AIR; RT

Yield Strength: 66 ksi
 Ult. Strength: 71 ksi
 Specimen Thk: 1 in.
 Specimen Width: 6 in.
 Ref: 88579

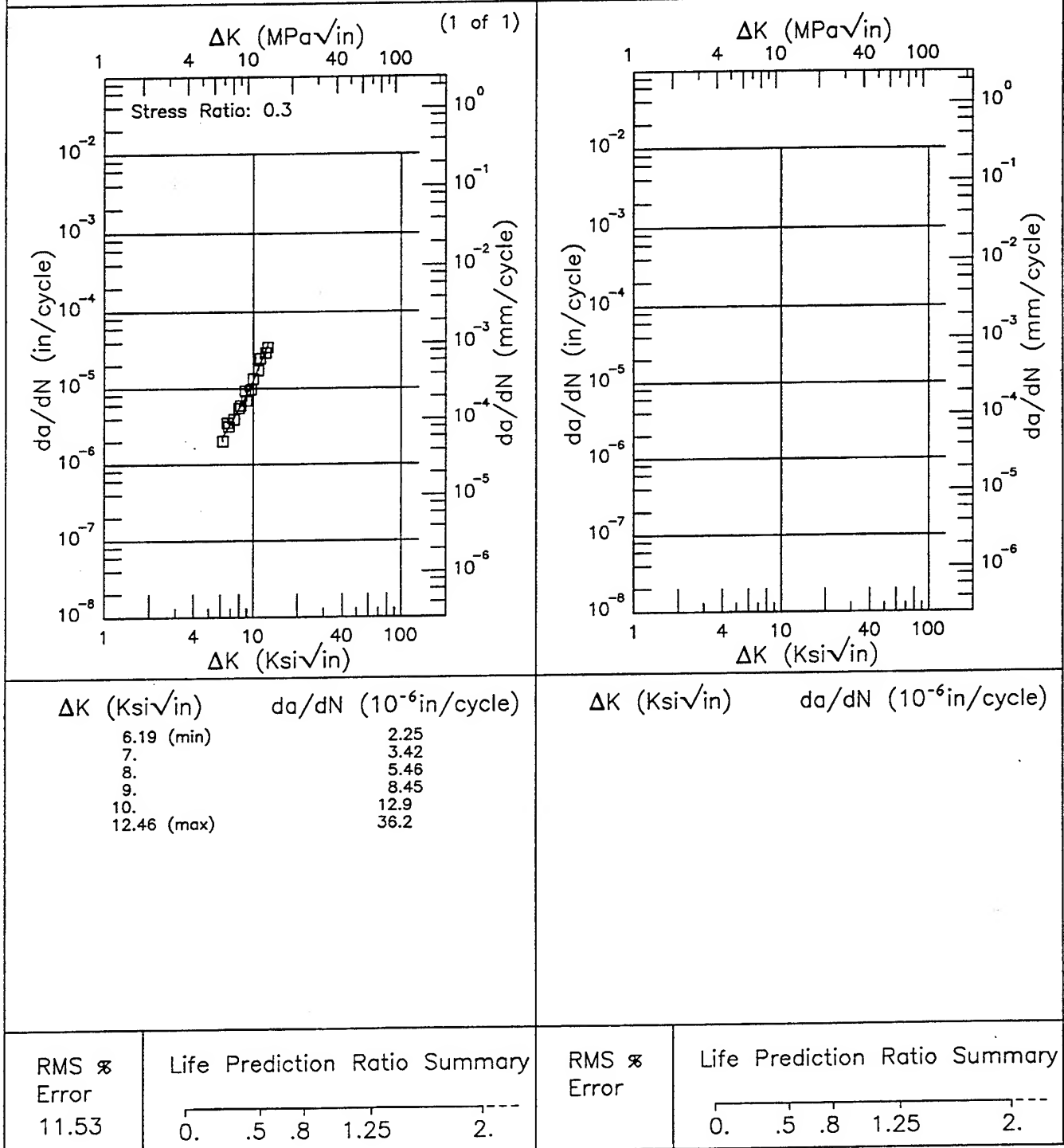


Figure 7.5.3.1.91

Condition/Ht: T851
 Form: 3 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.08
 Environment: DRY AIR; RT

Yield Strength: 65 ksi
 Ult. Strength: 71 ksi
 Specimen Thk: 1 in.
 Specimen Width: 5.99 - 6 in.
 Ref: 88579

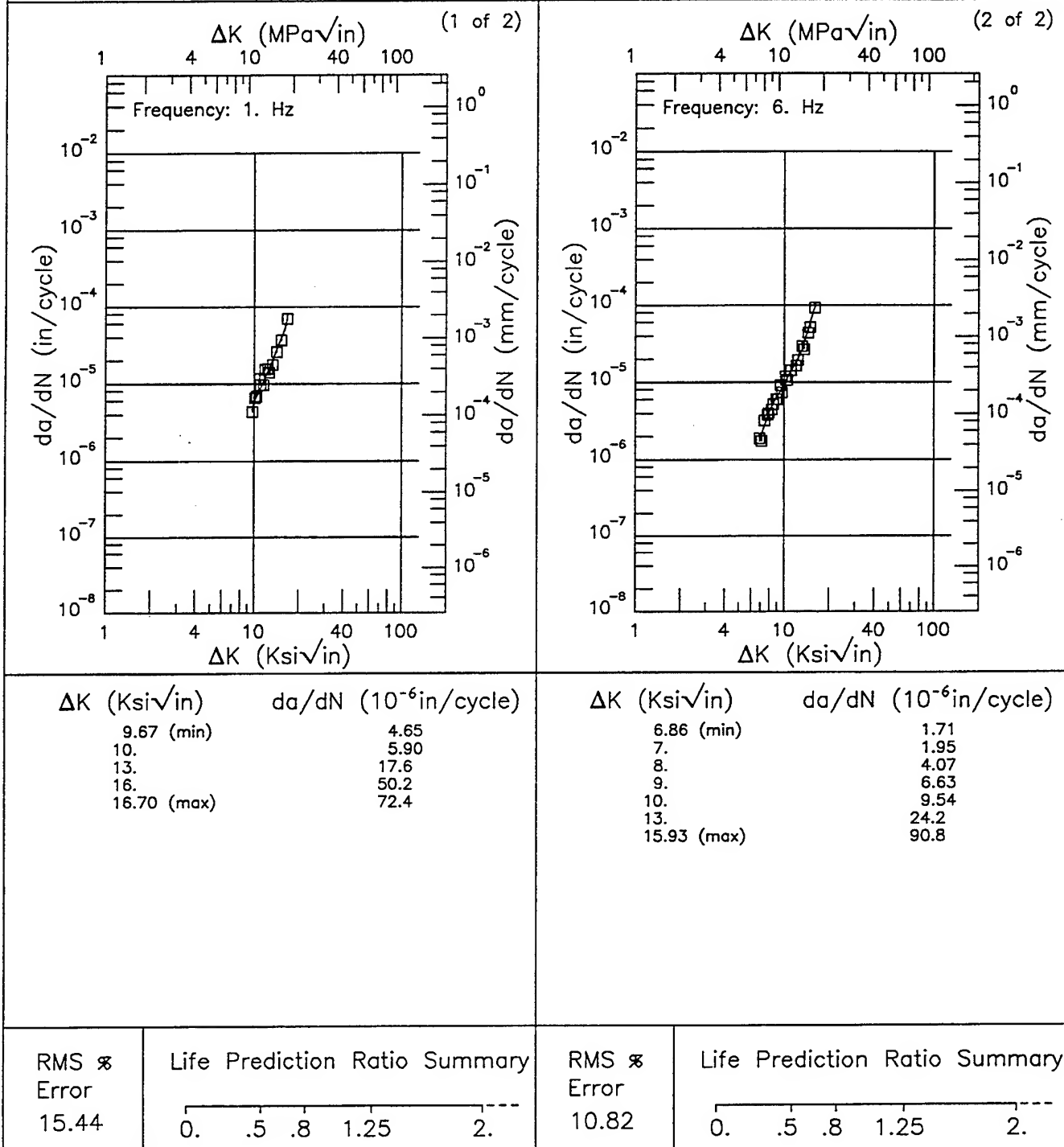


Figure 7.5.3.1.92

F

2024

Condition/Ht: T851
 Form: 4 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.1
 Environment: 3.5% NaCL; RT

Yield Strength: 64.6 ksi
 Ult. Strength: 71.3 ksi
 Specimen Thk: 1 in.
 Specimen Width: 2.55 in.
 Ref: 90981

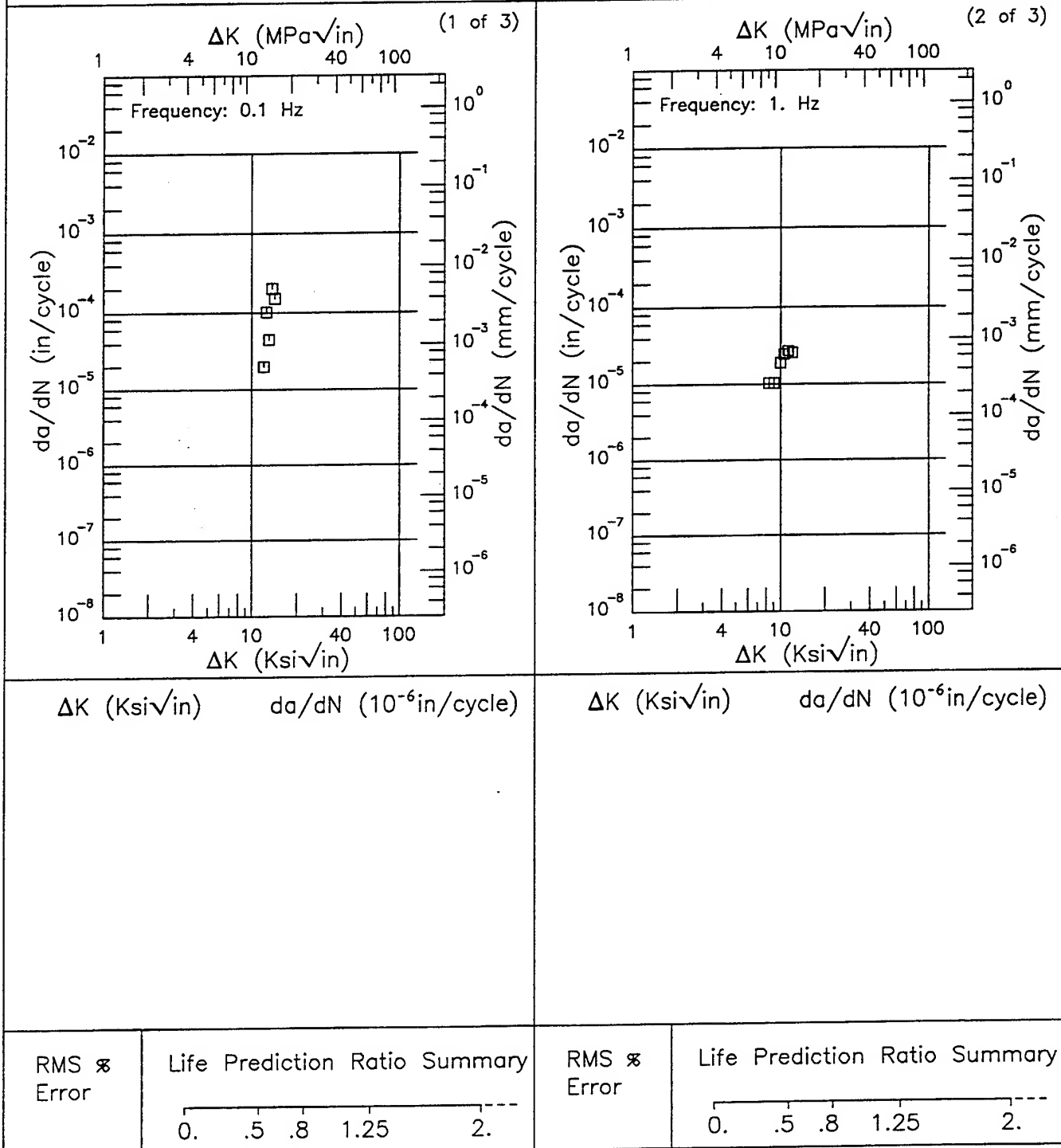


Figure 7.5.3.1.93

Condition/Ht: T851
 Form: 4 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.1
 Environment: 3.5% NaCl; RT

Yield Strength: 64.6 ksi
 Ult. Strength: 71.3 ksi
 Specimen Thk: 1 in.
 Specimen Width: 2.55 in.
 Ref: 90981

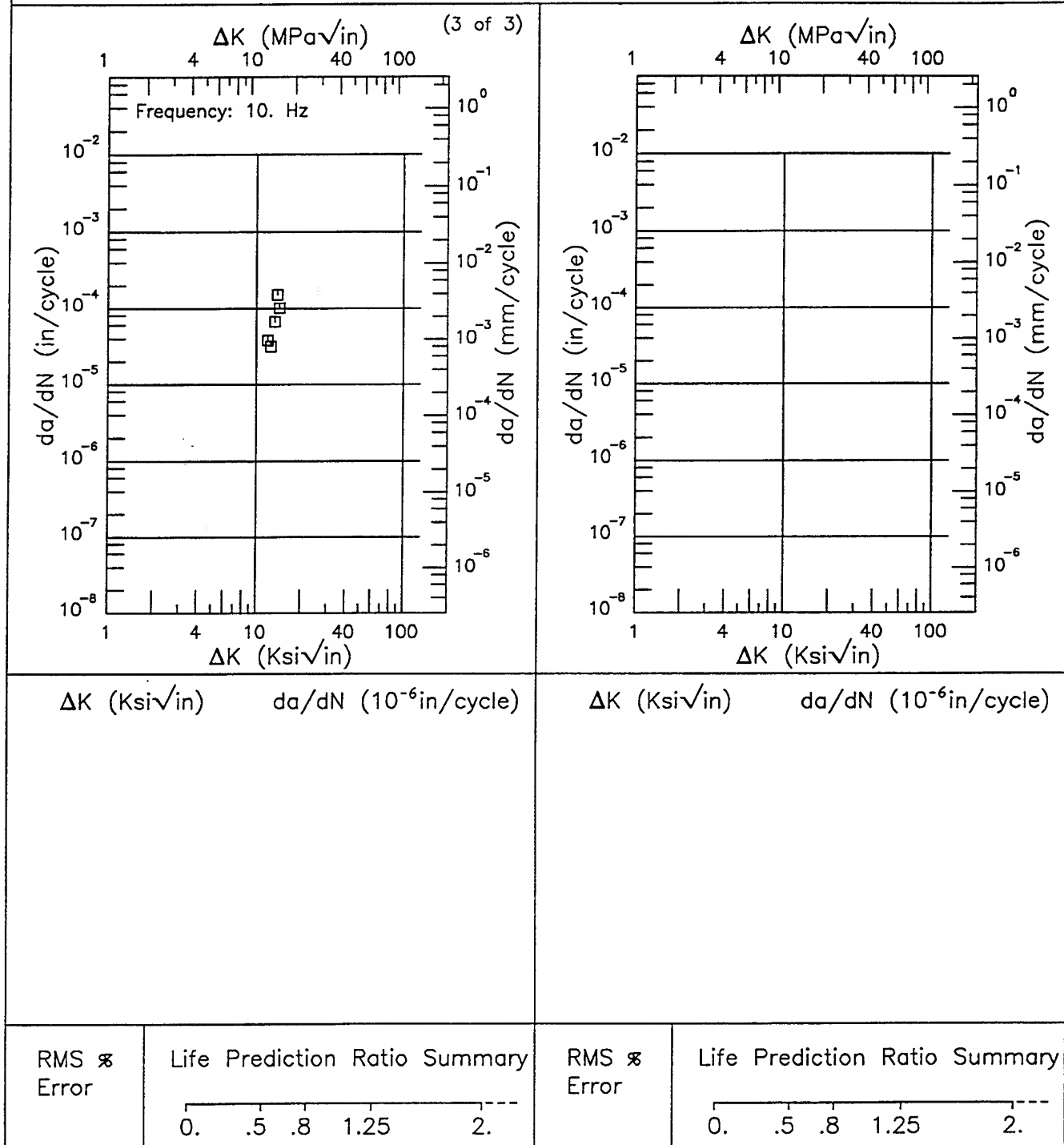


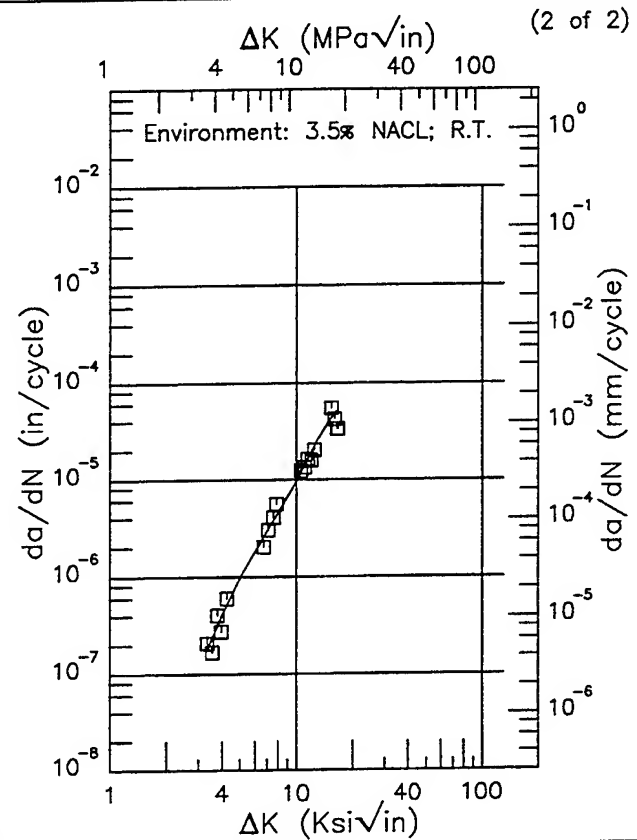
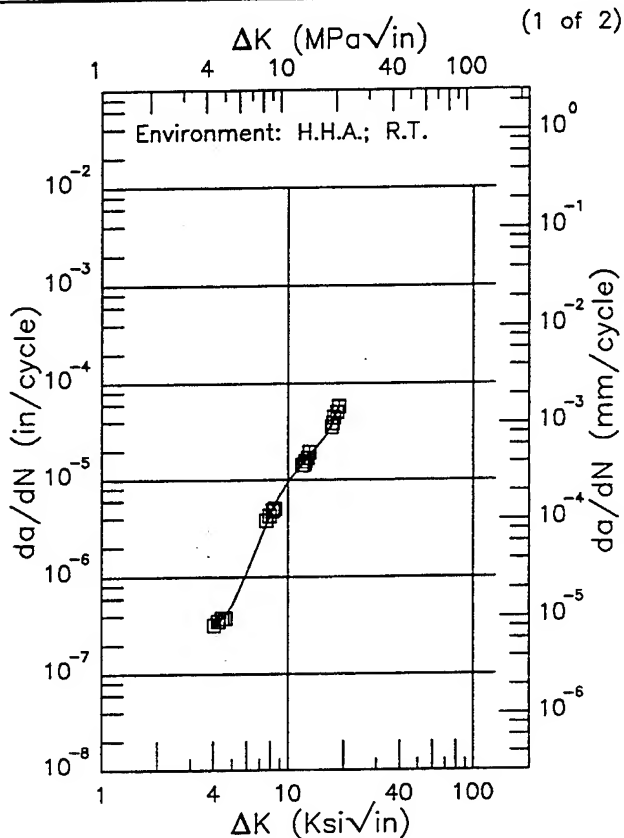
Figure 7.5.3.1.93 (Concluded)

2024

E

Condition/Ht: T851
 Form: 0.75 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Stress Ratio: 0.1
 Frequency: 20 Hz

Yield Strength: 68.6 ksi
 Ult. Strength: 73 ksi
 Specimen Thk: 0.76 - 0.761 in.
 Specimen Width: 5 in.
 Ref: 90981

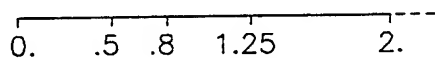


ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.01 (min)	0.300
5.	0.507
6.	1.10
7.	2.33
8.	4.37
9.	7.01
10.	9.76
13.	17.7
16.	29.0
18.82 (max)	56.4

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
3.33 (min)	0.175
3.5	0.224
4.	0.407
5.	0.962
6.	1.78
7.	2.92
8.	4.49
9.	6.67
10.	9.70
13.	25.9
16.	48.4
16.68 (max)	52.8

RMS %
 Error
 5.53

Life Prediction Ratio Summary



RMS %
 Error
 22.04

Life Prediction Ratio Summary

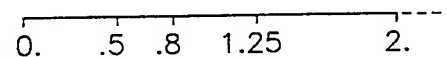


Figure 7.5.3.1.94

Condition/Ht: T851
 Form: 0.38 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Stress Ratio: 0.1
 Frequency: 20 Hz

Yield Strength: 66.6 ksi
 Ult. Strength: 72 ksi
 Specimen Thk: 0.375 in.
 Specimen Width: 5 in.
 Ref: 90981

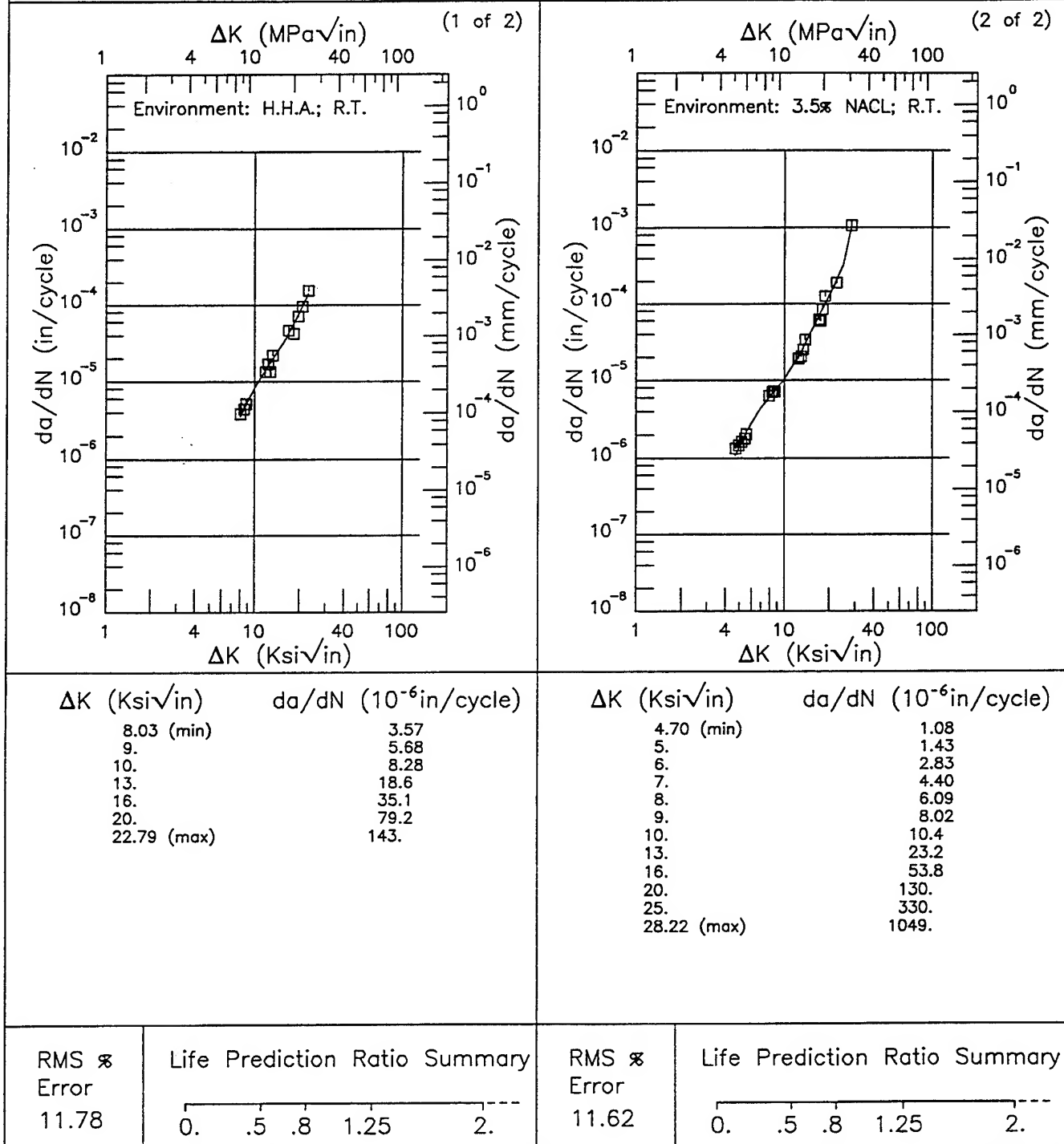


Figure 7.5.3.1.95

R

2024

Condition/Ht: T851
 Form: 0.38 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 20 Hz
 Environment: H.H.A.; RT

Yield Strength: 66.6 ksi
 Ult. Strength: 72 ksi
 Specimen Thk: 0.375 in.
 Specimen Width: 5 in.
 Ref: 90981

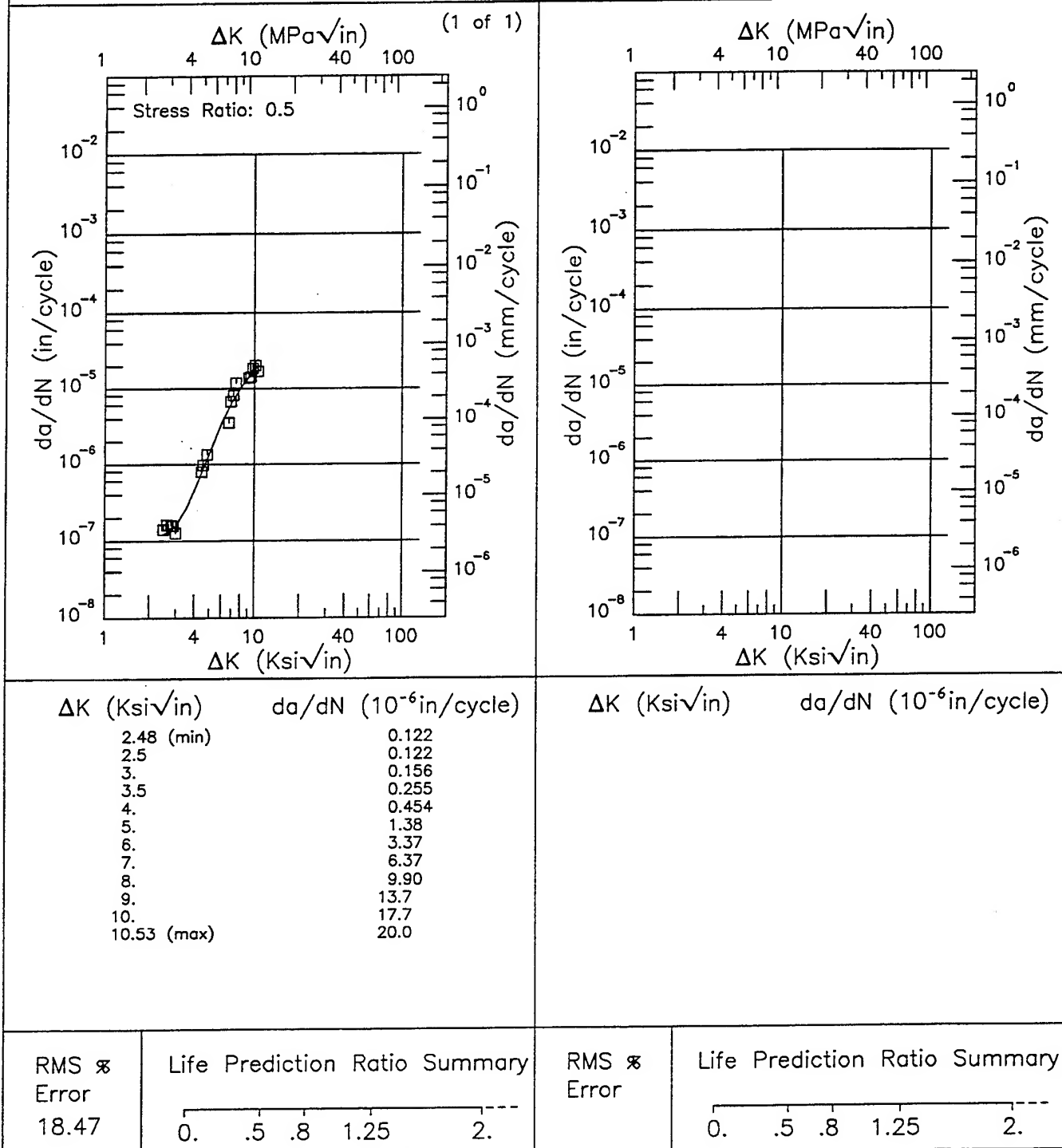


Figure 7.5.3.1.96

Condition/Ht: T851
Form: 0.75 in. Plate
Specimen Type: CCP (max load specified)
Orientation: T-L
Frequency: 20 Hz
Environment: 3.5% NaCl; RT

Yield Strength: 68.6 ksi
Ult. Strength: 73 ksi
Specimen Thk: 0.76 in.
Specimen Width: 5 in.
Ref: 90981

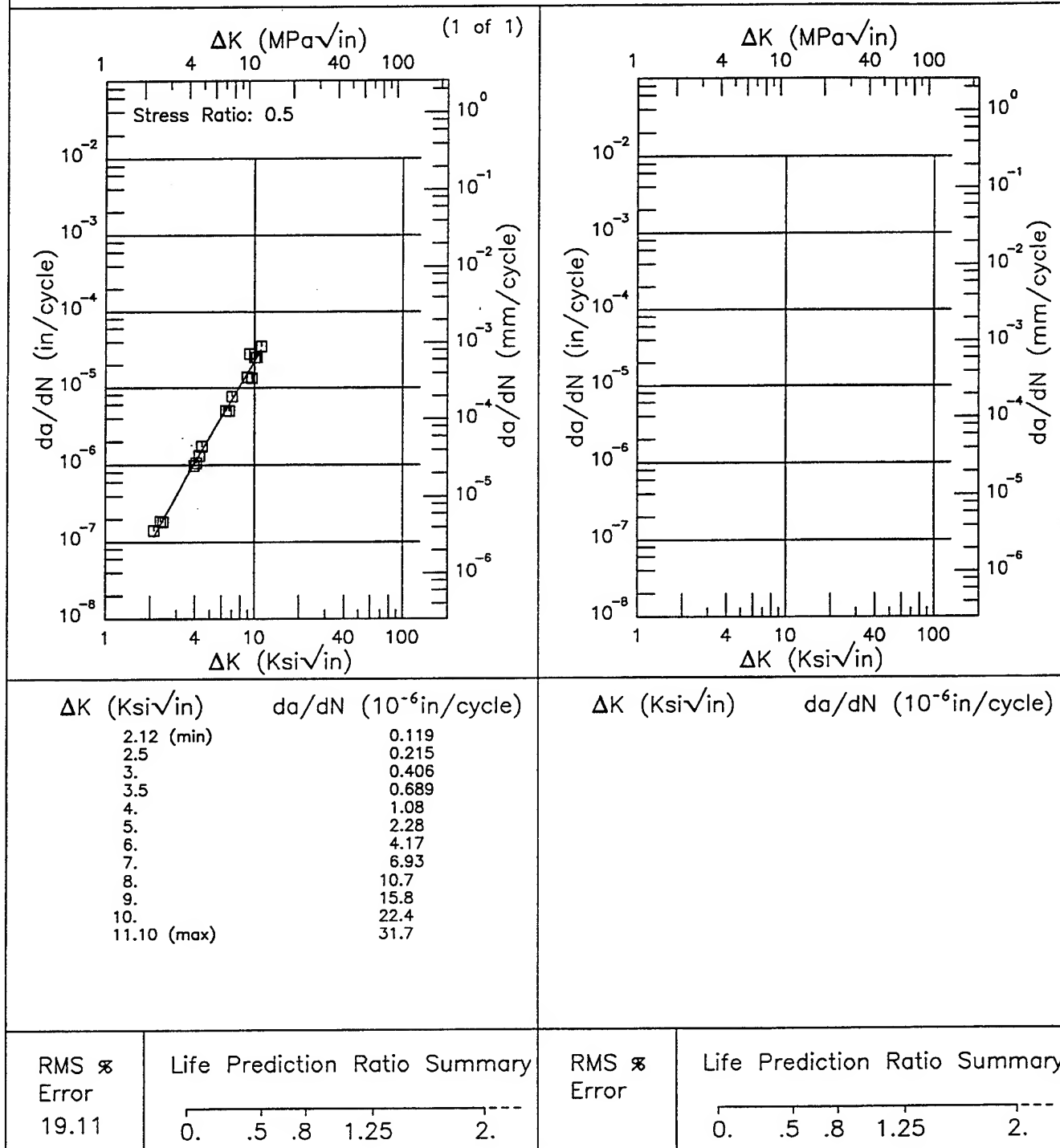


Figure 7.5.3.1.97

R

2024

Condition/Ht: T851
 Form: 0.75 in. Plate
 Specimen Type: WOL
 Orientation: L-T
 Frequency: 25 Hz
 Environment: H.H.A.; RT

Yield Strength: 67 ksi
 Ult. Strength: 71 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 2.55 in.
 Ref: NC003

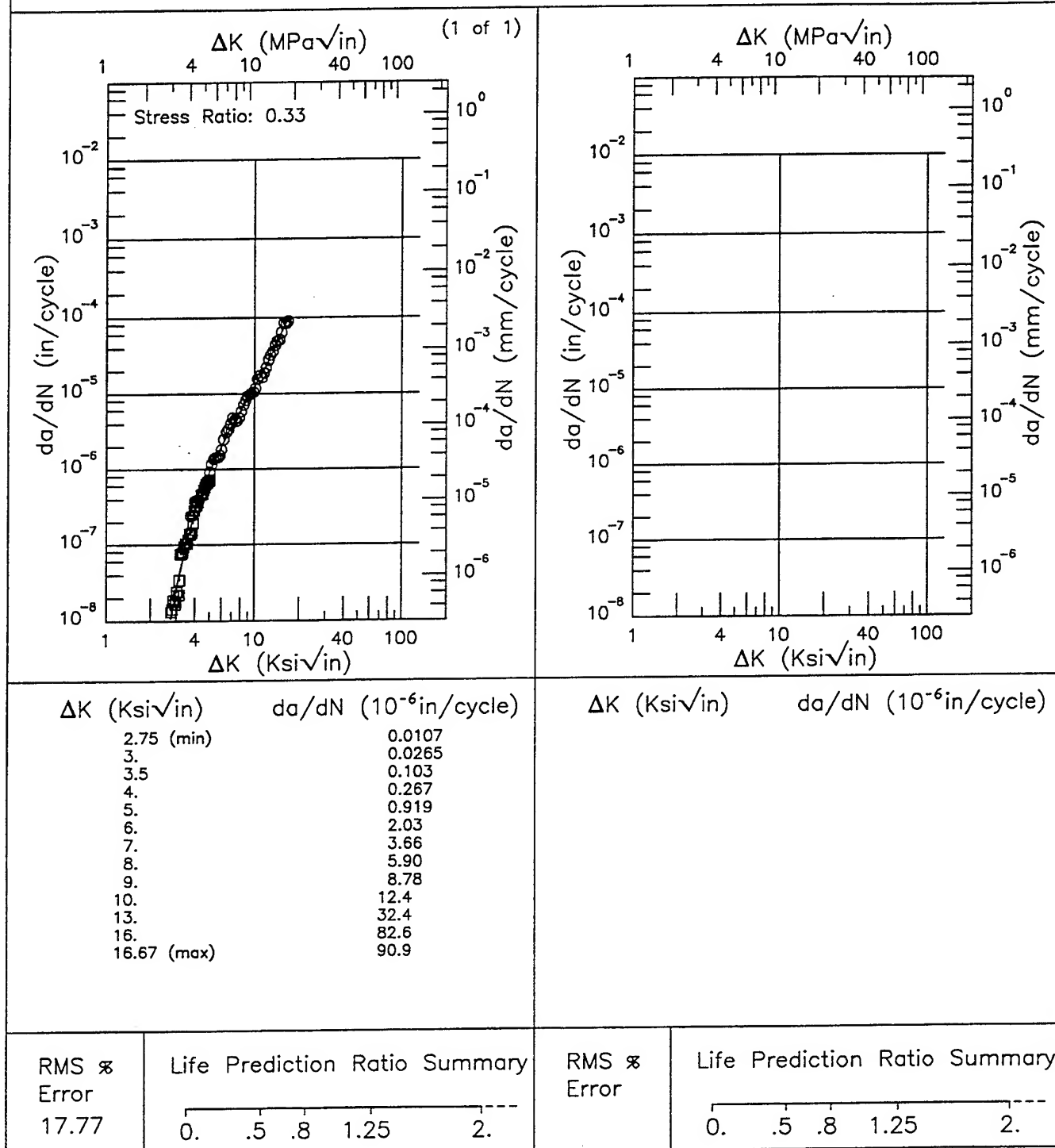


Figure 7.5.3.1.98

Condition/Ht: T851
 Form: 2 in. Plate
 Specimen Type: DCB
 Orientation: L-T
 Stress Ratio: 0.02
 Frequency: 1 Hz

Yield Strength: 64 ksi
 Ult. Strength: 69 – 71 ksi
 Specimen Thk: 0.75 in.
 Specimen Width: 5.5 in.
 Ref: 84360

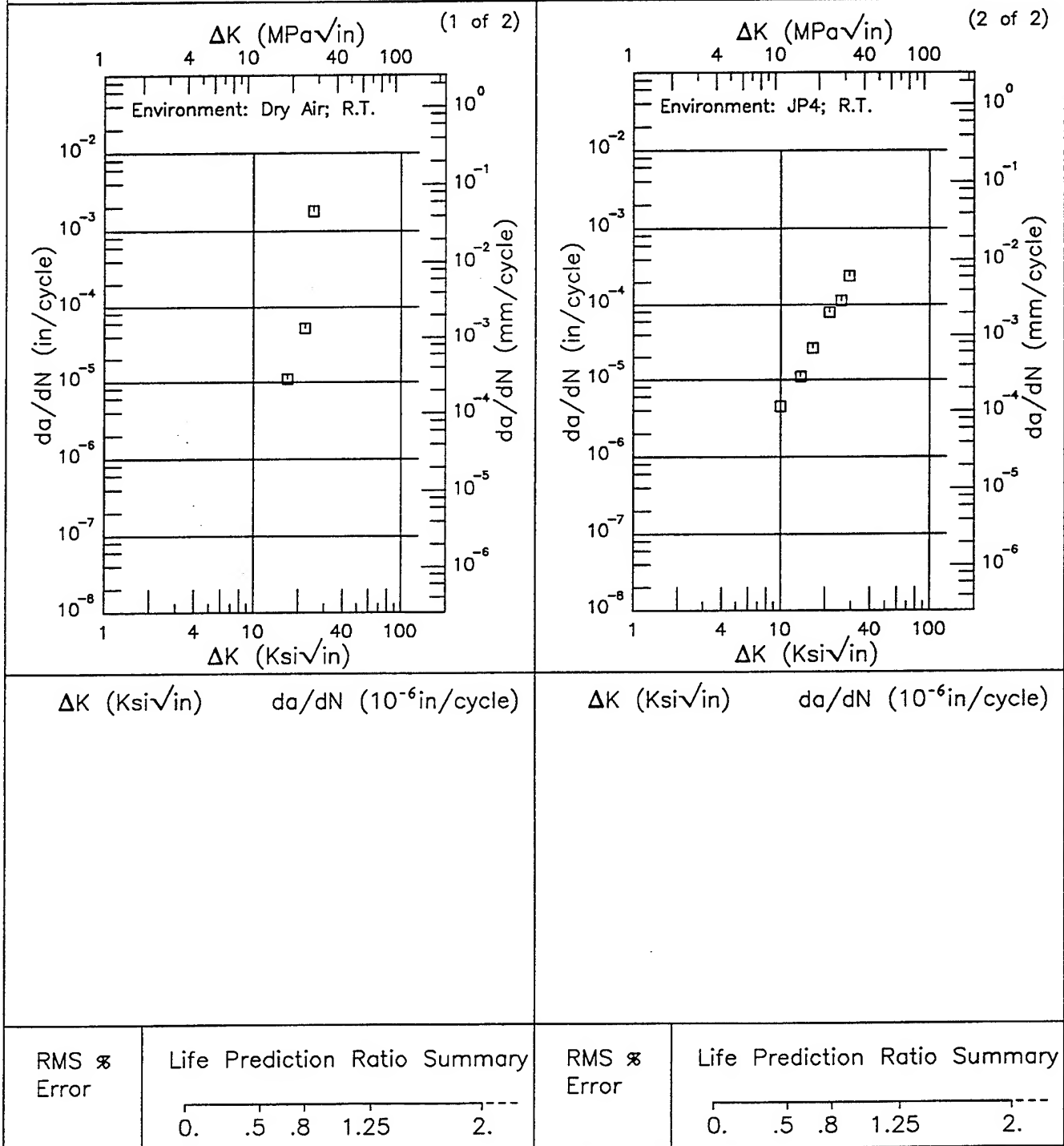


Figure 7.5.3.1.99

E

2024

Condition/Ht: T851
Form: 2 in. Plate
Specimen Type: DCB
Orientation: L-T
Stress Ratio: 0.02
Frequency: 10 Hz

Yield Strength: 64 ksi
Ult. Strength: 69 - 71 ksi
Specimen Thk: 0.75 in.
Specimen Width: 5.5 in.
Ref: 84360

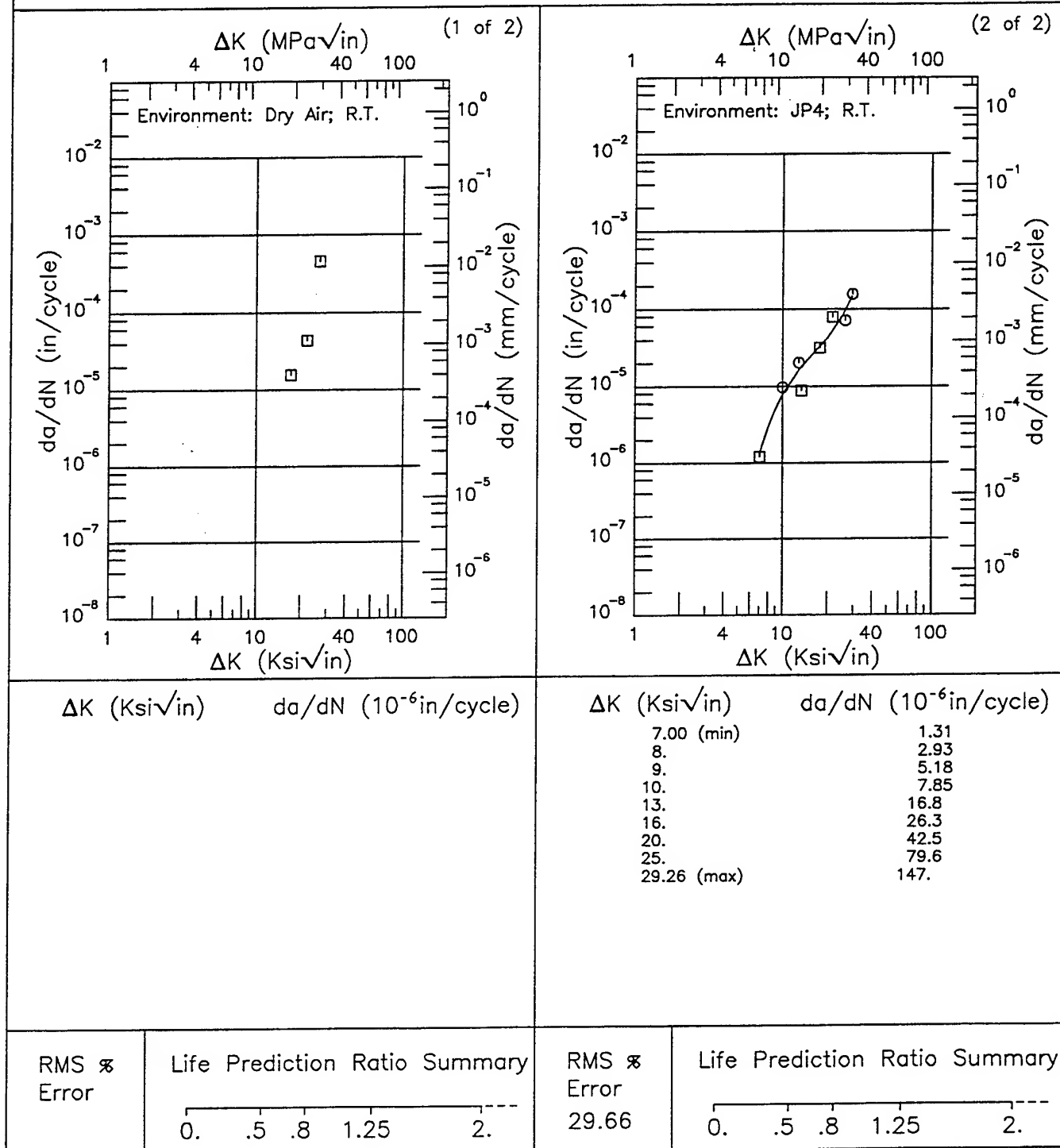


Figure 7.5.3.1.100

Condition/Ht: T851
 Form: 3 in. Plate
 Specimen Type: DCB
 Orientation: L-T
 Stress Ratio: 0.02
 Frequency: 1 Hz

Yield Strength: 59 ksi
 Ult. Strength: 66 ksi
 Specimen Thk: 1 in.
 Specimen Width: 5.5 in.
 Ref: 84360

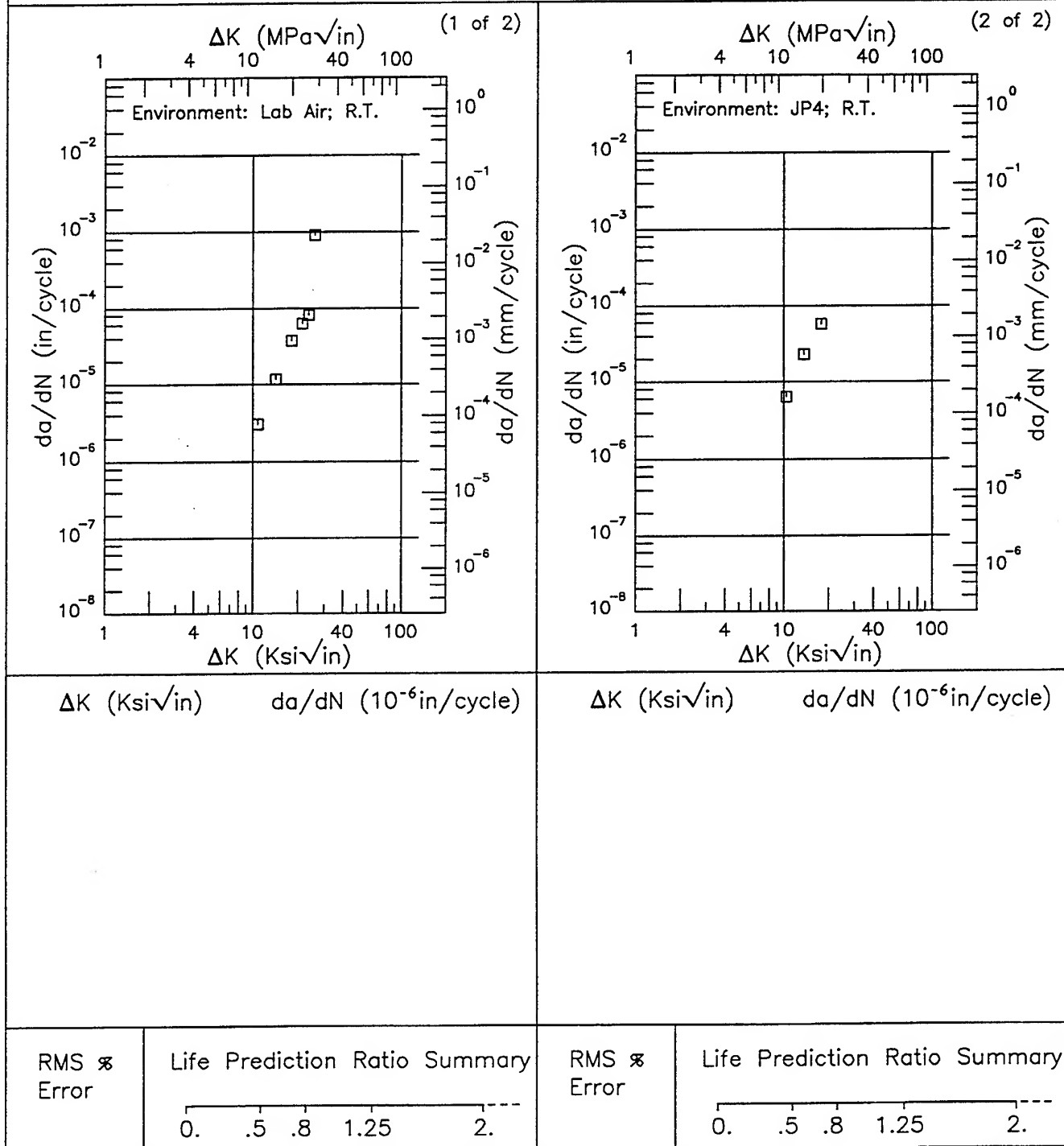


Figure 7.5.3.1.101

2024

E

Condition/Ht: T851
Form: 2 - 3 in. Plate
Specimen Type: DCB
Orientation: L-T
Stress Ratio: 0.02
Frequency: 10 Hz

Yield Strength: 59 - 64 ksi
Ult. Strength: 66 - 71 ksi
Specimen Thk: 0.875 in.
Specimen Width: 5.5 in.
Ref: 84360

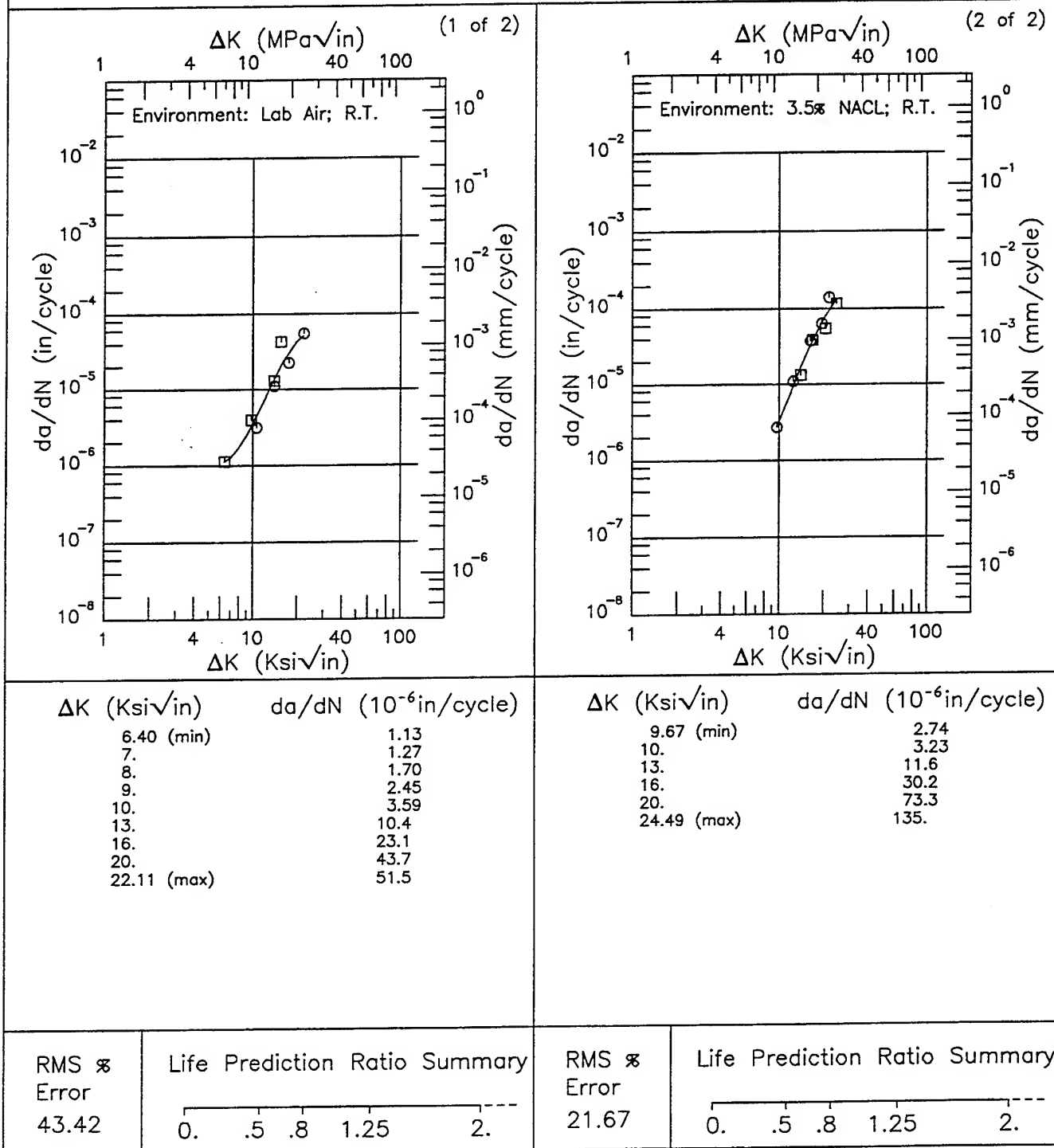


Figure 7.5.3.1.102

Condition/Ht: T851
Form: 3 in. Plate
Specimen Type: DCB
Orientation: L-T
Stress Ratio: 0.02
Frequency: 10 Hz

Yield Strength: 59 ksi
Ult. Strength: 66 ksi
Specimen Thk: 1 in.
Specimen Width: 5.5 in.
Ref: 84360

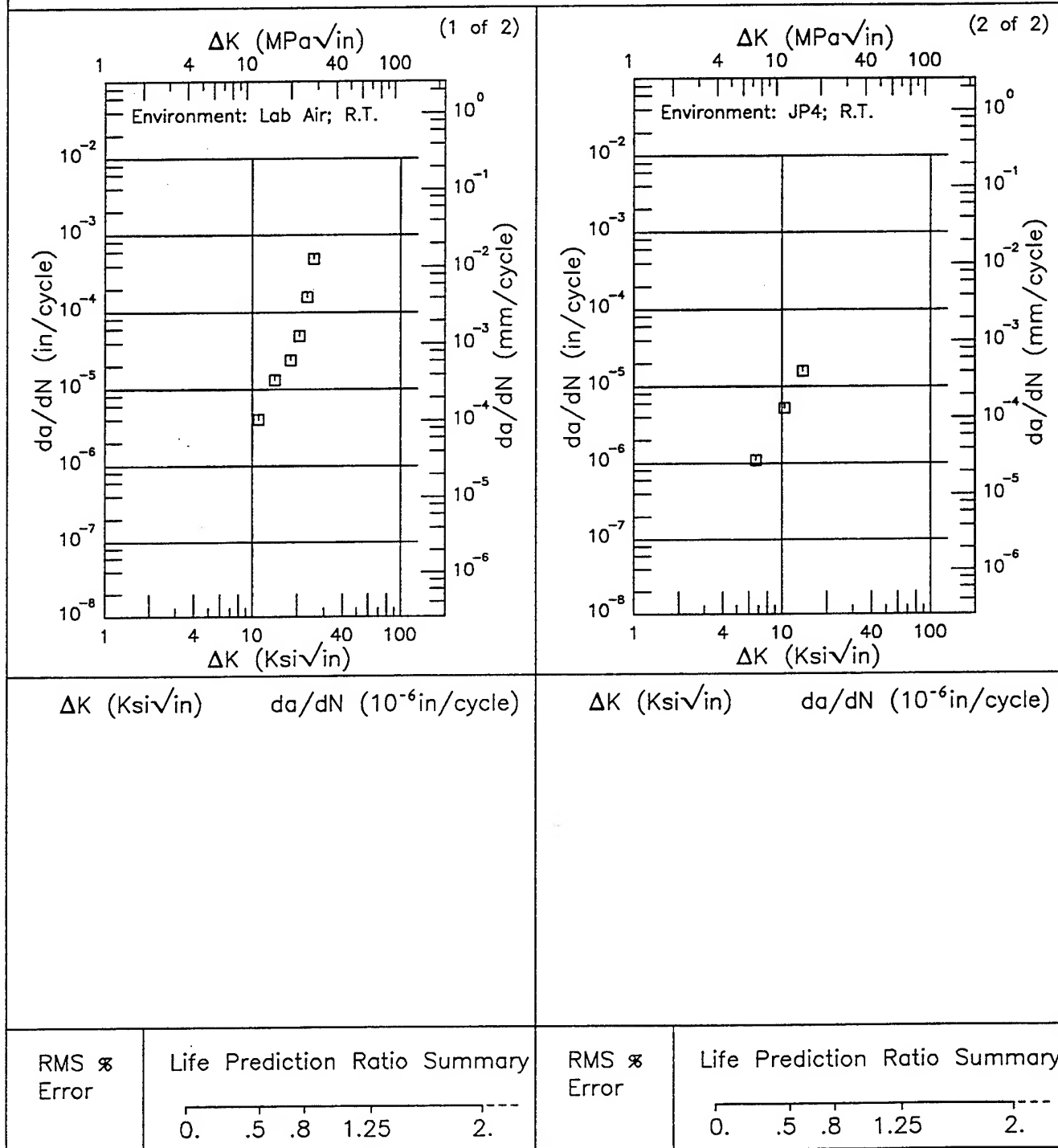


Figure 7.5.3.1.103

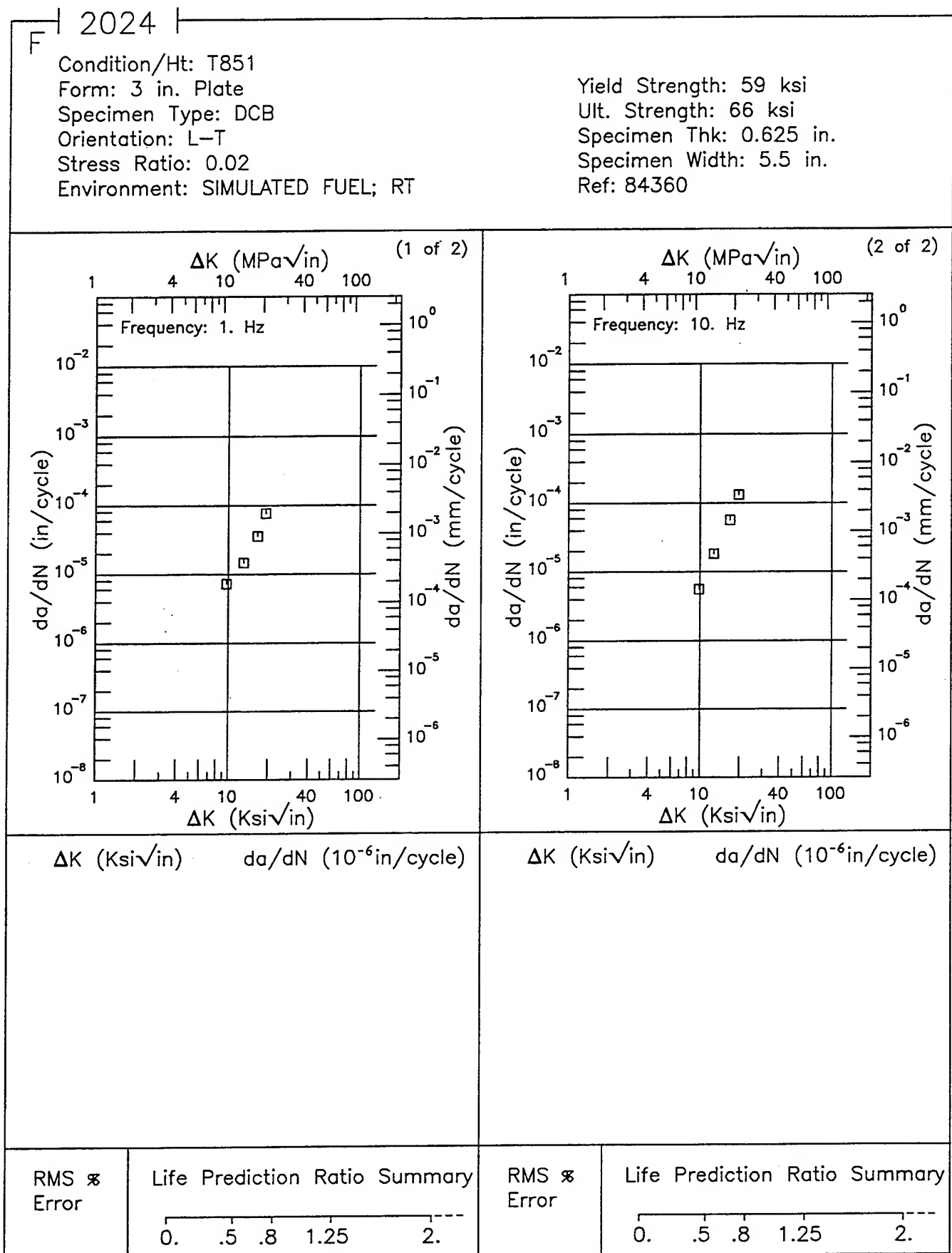


Figure 7.5.3.1.104

Condition/Ht: T851
 Form: 2 - 3 in. Plate
 Specimen Type: DCB
 Orientation: L-T
 Frequency: 1 Hz
 Environment: 3.5% NaCl; RT

Yield Strength: 59 - 64 ksi
 Ult. Strength: 66 - 71 ksi
 Specimen Thk: 0.875 in.
 Specimen Width: 5.5 in.
 Ref: 84360

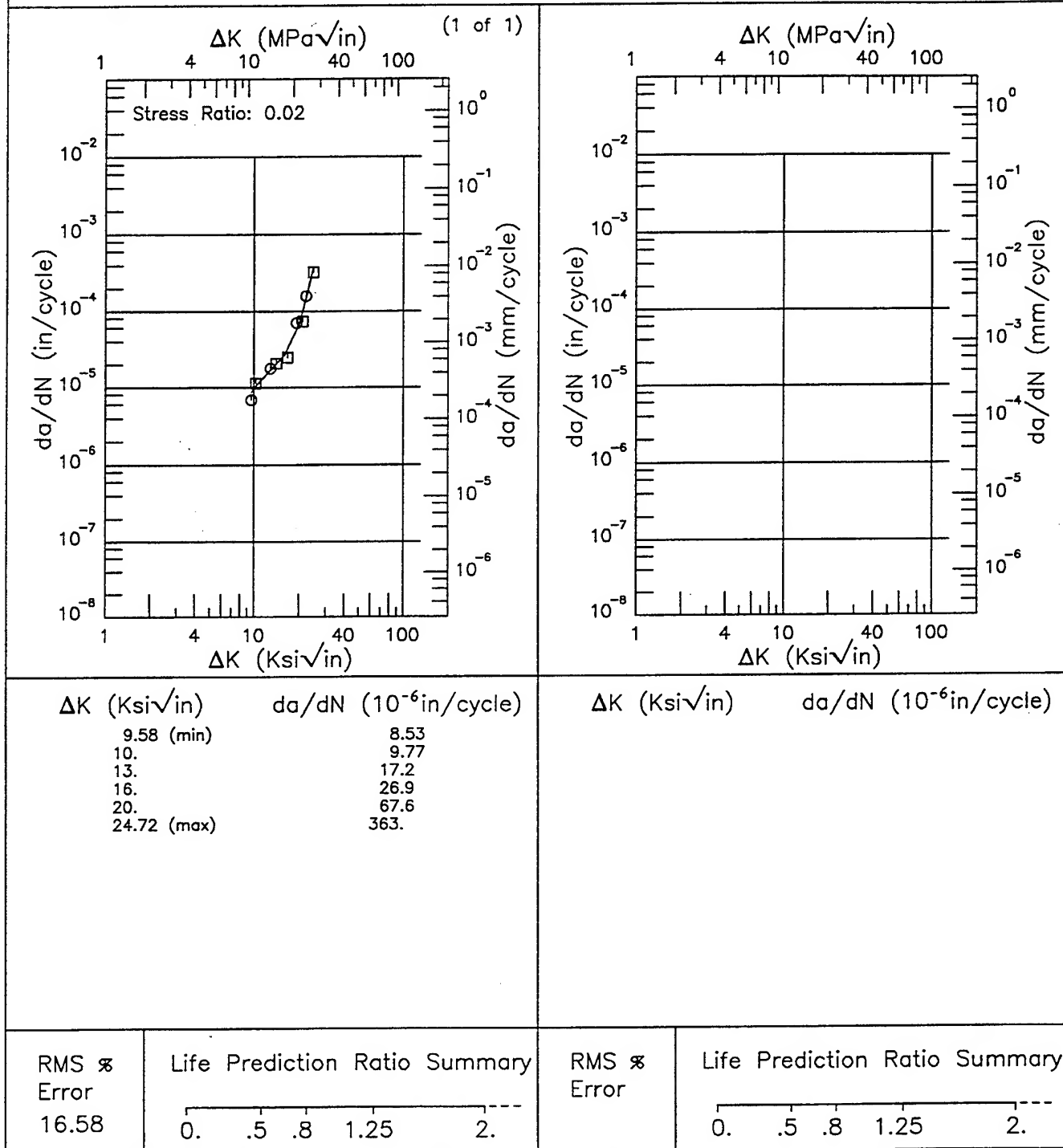


Figure 7.5.3.1.105

2024

Condition/Ht: T851
Form: 2 in. Plate
Specimen Type: DCB
Orientation: L-T
Frequency: 10 Hz
Environment: DRY AIR; RT

Yield Strength: 64 ksi
Ult. Strength: 71 ksi
Specimen Thk: 0.75 in.
Specimen Width: 5.5 in.
Ref: 84360

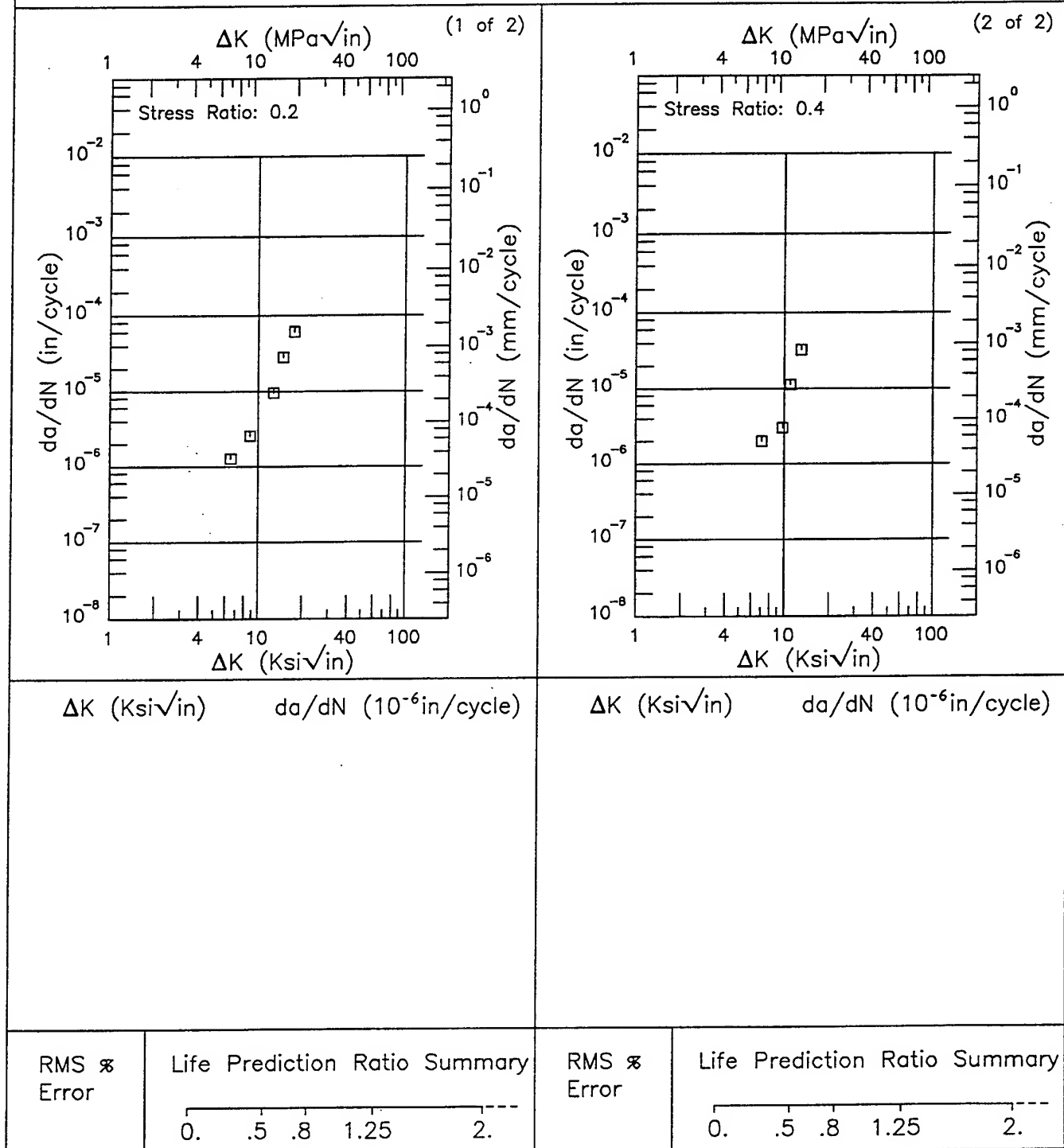


Figure 7.5.3.1.106

Condition/Ht: T851
 Form: 0.38 in. Plate
 Specimen Type: PTSF (max stress specified)
 Orientation: L-S
 Frequency: 20 Hz
 Environment: H.H.A.; RT

Yield Strength: 70.1 ksi
 Ult. Strength: 73.5 ksi
 Specimen Thk: 0.374 - 0.377 in.
 Specimen Width: 5.004 - 5.006 in.
 Ref: 90981

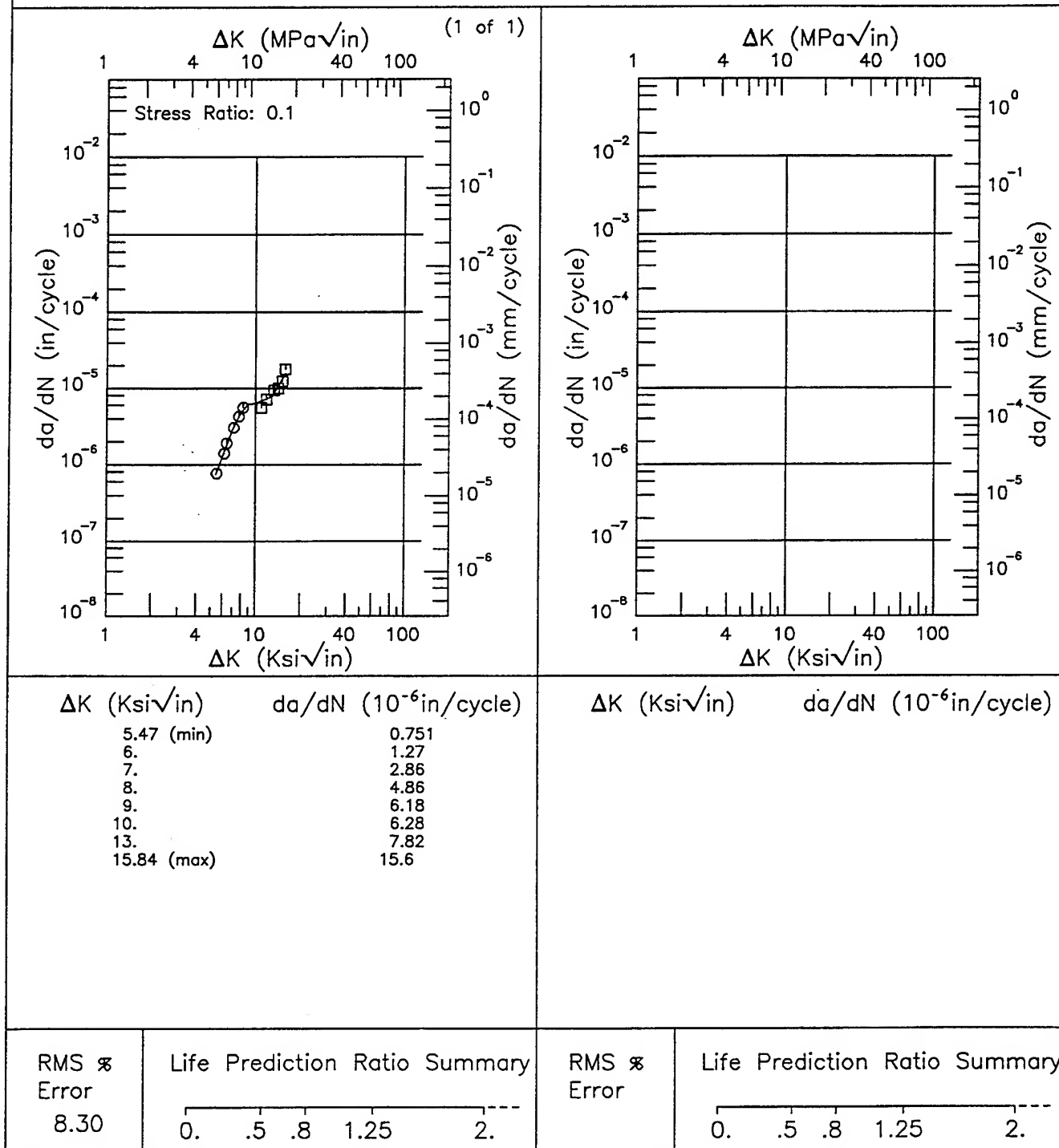


Figure 7.5.3.1.107

F

2024

Condition/Ht: T851
 Form: 0.75 in. Plate
 Specimen Type: PTSF (max stress specified)
 Orientation: L-S
 Stress Ratio: 0.1
 Environment: H.H.A.; RT

Yield Strength: 70.1 ksi
 Ult. Strength: 73.5 ksi
 Specimen Thk: 0.759 - 0.76 in.
 Specimen Width: 5.003 in.
 Ref: 90981

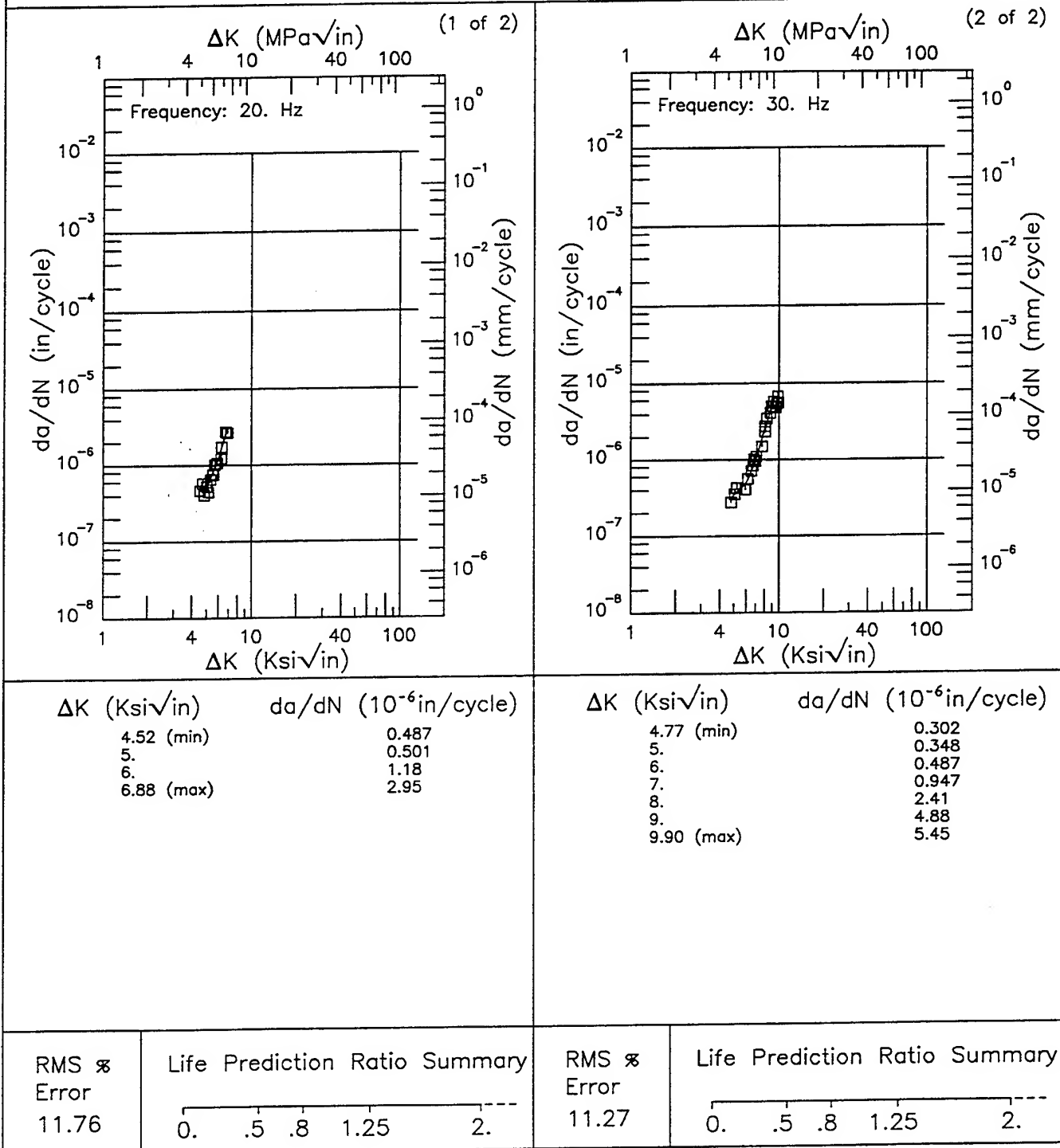


Figure 7.5.3.1.108

Condition/Ht: T851
 Form: 0.75 in. Plate
 Specimen Type: PTSF (max stress specified)
 Orientation: T-S
 Frequency: 2 Hz
 Environment: H.H.A.; RT

Yield Strength: 70.1 ksi
 Ult. Strength: 73.5 ksi
 Specimen Thk: 0.759 in.
 Specimen Width: 5.004 - 5.006 in.
 Ref: 90981

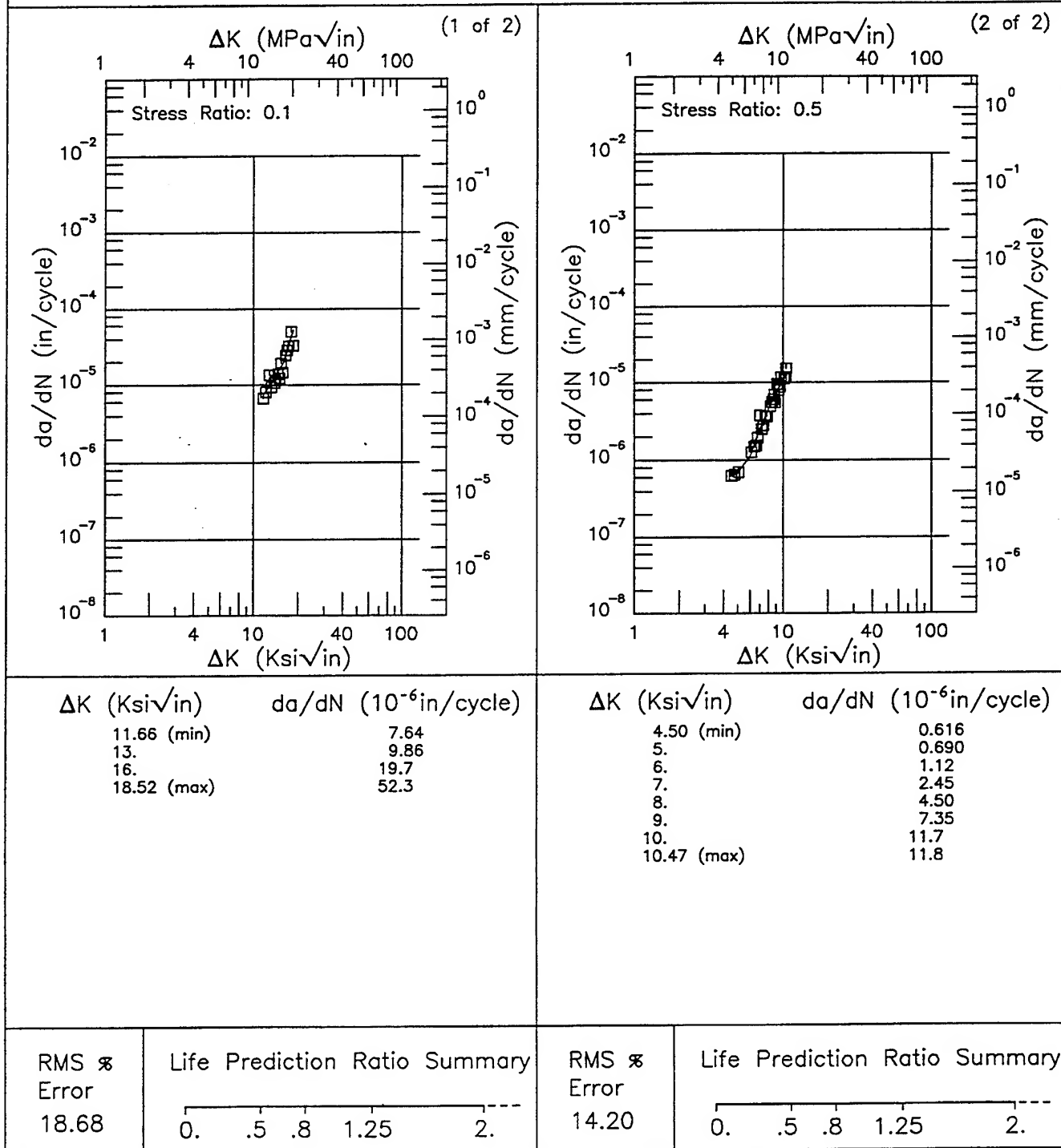


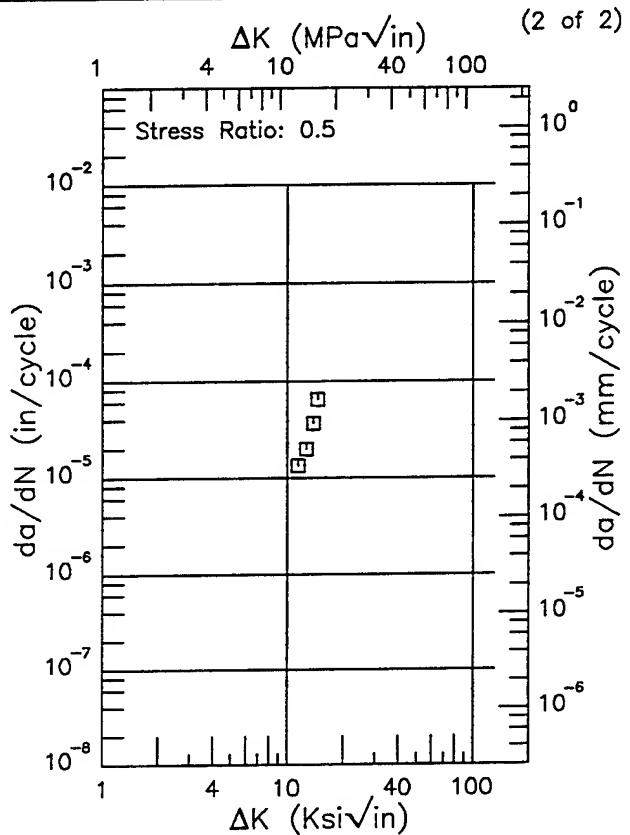
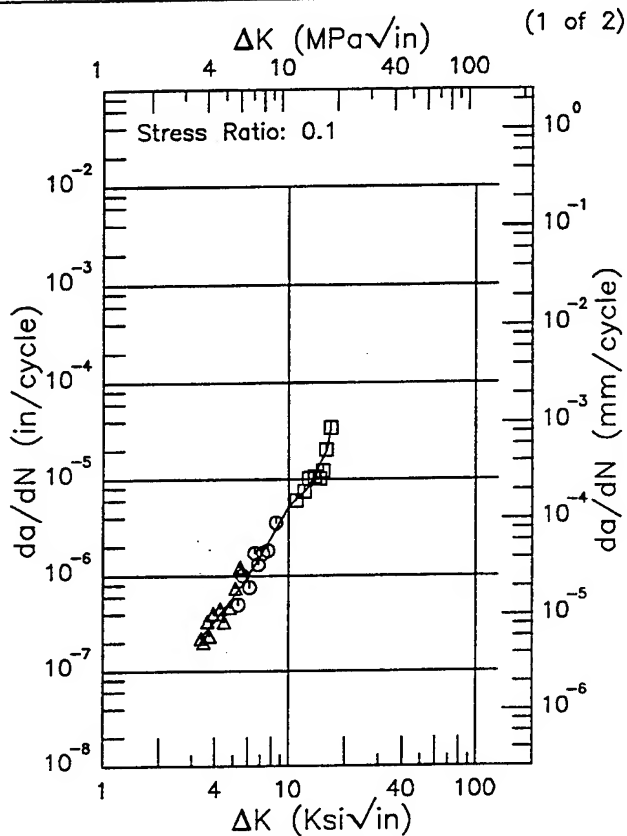
Figure 7.5.3.1.109

R

2024

Condition/Ht: T851
 Form: 0.38 in. Plate
 Specimen Type: PTSF (max stress specified)
 Orientation: T-S
 Frequency: 20 Hz
 Environment: H.H.A.; RT

Yield Strength: 70.1 ksi
 Ult. Strength: 73.5 ksi
 Specimen Thk: 0.376 - 0.38 in.
 Specimen Width: 5.003 - 5.006 in.
 Ref: 90981



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
3.37 (min)	0.230
3.5	0.249
4.	0.335
5.	0.590
6.	0.992
7.	1.60
8.	2.49
9.	3.70
10.	5.14
13.	8.64
16.	20.4
16.73 (max)	33.3

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
---------------------	-------------------------------

RMS %
 Error
 22.17

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.5.3.1.110

Condition/Ht: T851
 Form: 0.75 in. Plate
 Specimen Type: PTSF (max stress specified)
 Orientation: T-S
 Frequency: 20 Hz
 Environment: H.H.A.; RT

Yield Strength: 70.1 ksi
 Ult. Strength: 73.5 ksi
 Specimen Thk: 0.758 - 0.764 in.
 Specimen Width: 5 - 5.005 in.
 Ref: 90981

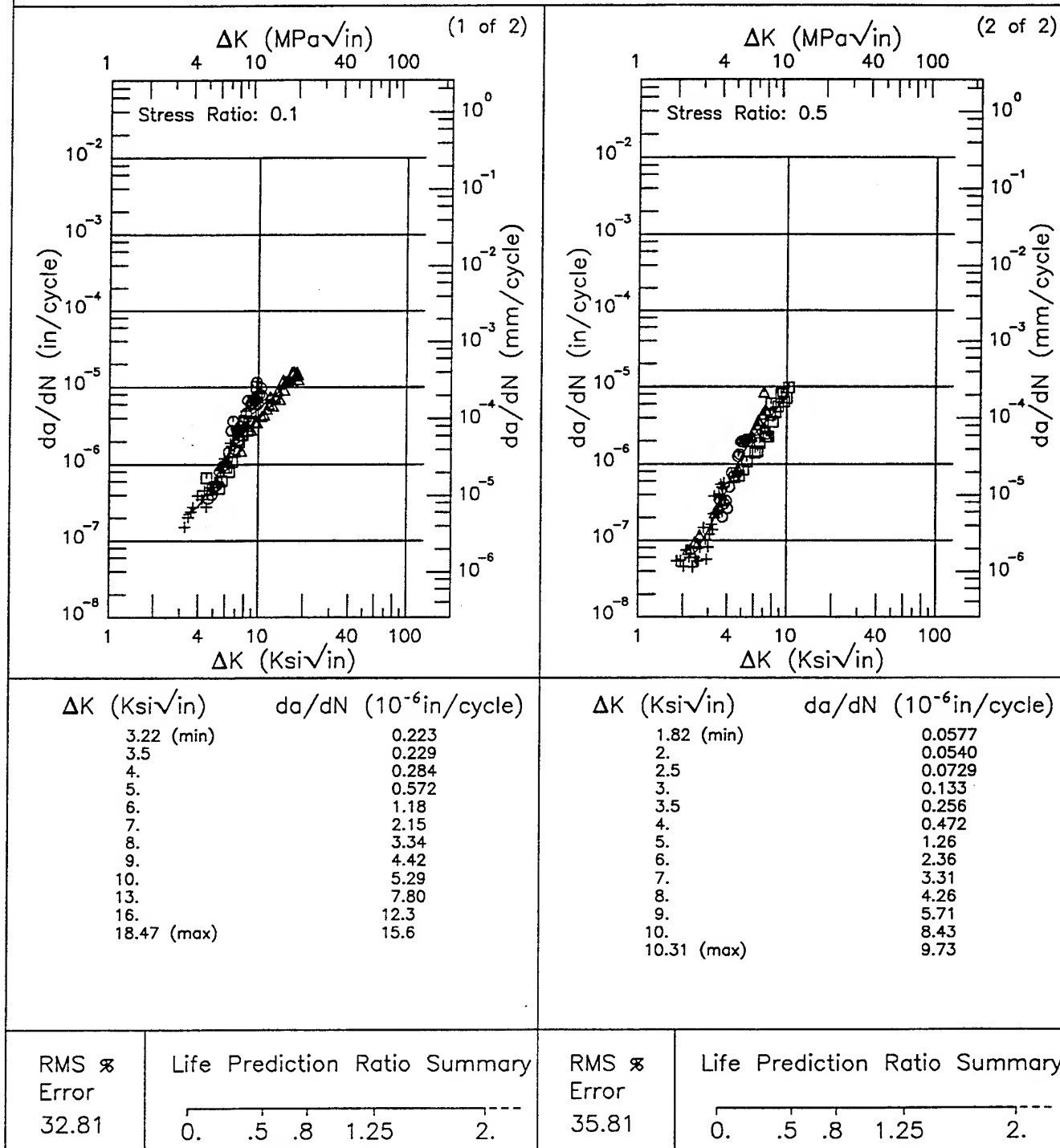


Figure 7.5.3.1.111

R

2024

Condition/Ht: T851
 Form: 0.75 in. Plate
 Specimen Type: PTSF (max stress specified)
 Orientation: T-S
 Frequency: 2 Hz
 Environment: 3.5% NaCl; RT

Yield Strength: 70.1 ksi
 Ult. Strength: 73.5 ksi
 Specimen Thk: 0.763 in.
 Specimen Width: 5.003 in.
 Ref: 90981

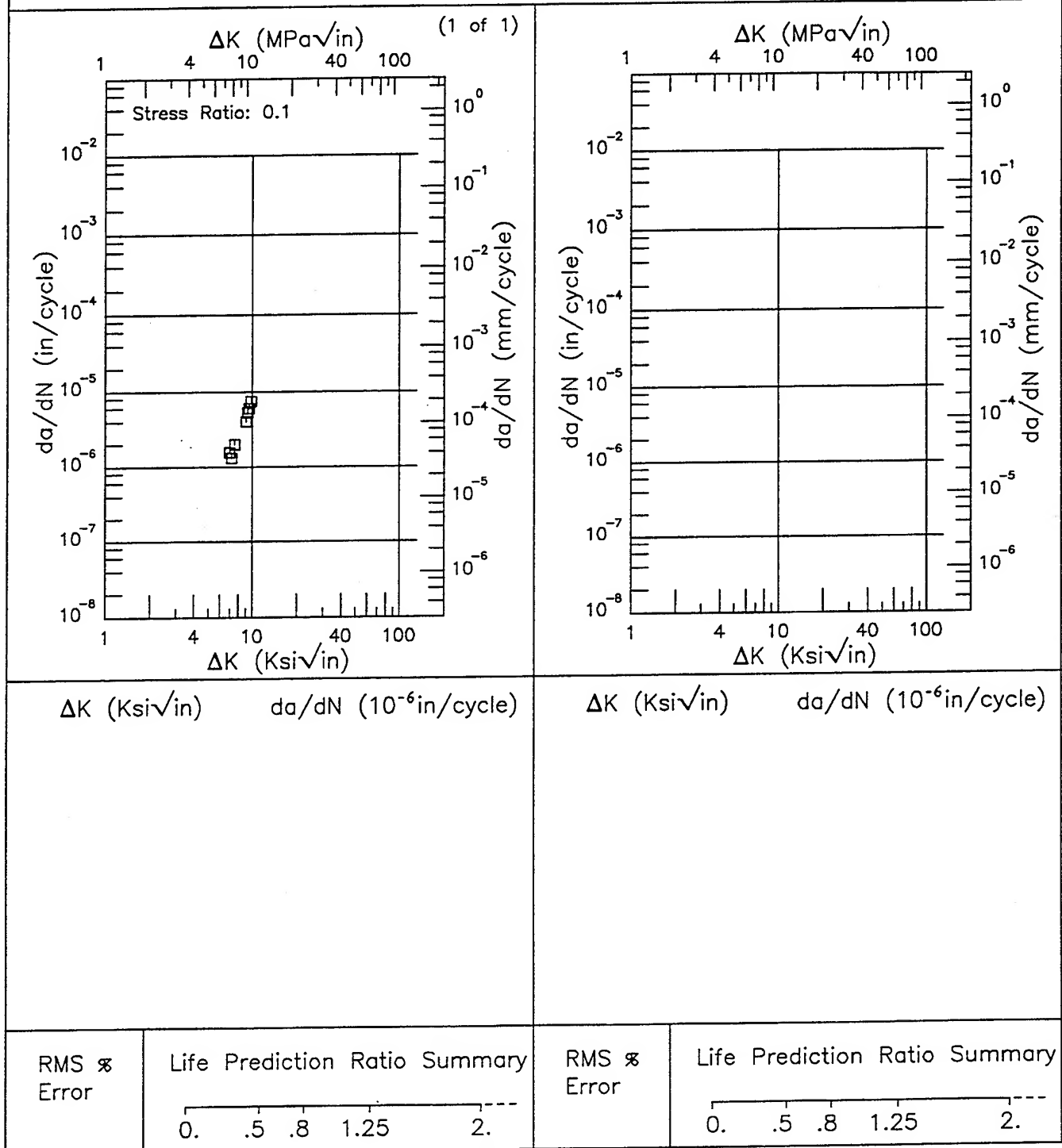
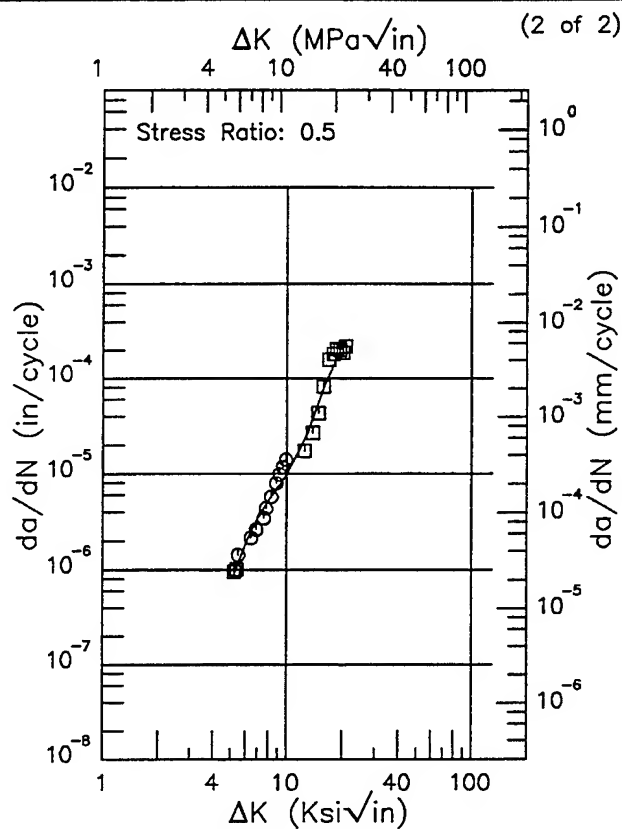


Figure 7.5.3.1.112

Yield Strength: 70.1 ksi
Ult. Strength: 73.5 ksi
Specimen Thk: 0.759 - 0.763 in.
Specimen Width: 5 - 5.005 in.
Ref: 90981



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.20 (min)	0.854
6.	1.85
7.	3.43
8.	5.21
9.	7.28
10.	9.89
13.	26.8
16.	82.6
20.	229.
20.76 (max)	254.

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.5.3.1.113

R

2024

Condition/Ht: T851

Form: 0.38 in. Plate

Specimen Type: PTSF (max stress specified)

Orientation: T-S

Frequency: 20 Hz

Environment: 3.5% NaCl; RT

Yield Strength: 70.1 ksi

Ult. Strength: 73.5 ksi

Specimen Thk: 0.377 - 0.38 in.

Specimen Width: 5.002 - 5.005 in.

Ref: 90981

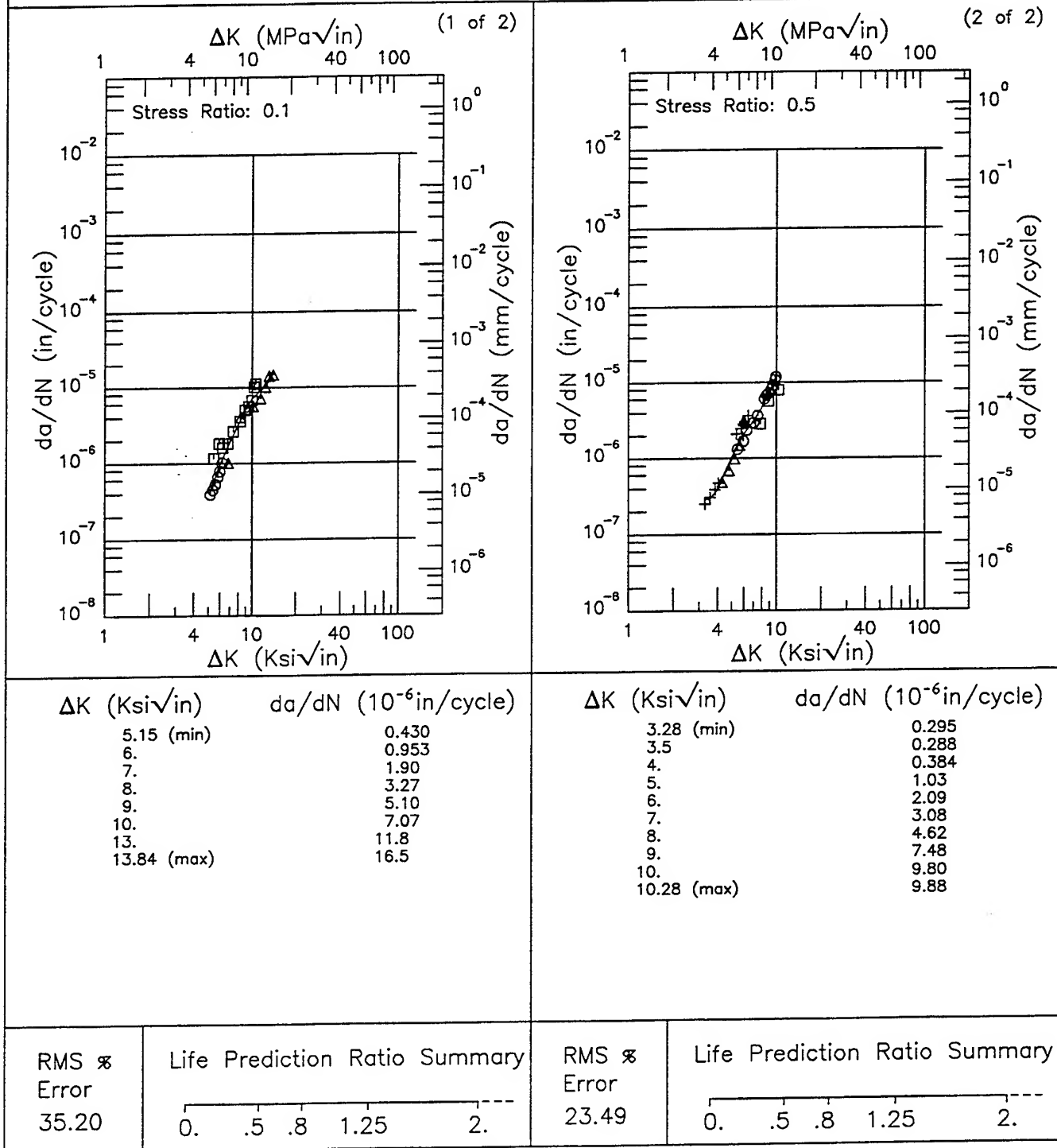


Figure 7.5.3.1.114

Yield Strength: 70.1 ksi
Ult. Strength: 73.5 ksi
Specimen Thk: 0.75 in.
Specimen Width: 5 in.
Ref: 90981



R

2024

Condition/Ht: T851

Form: 0.75 in. Plate

Specimen Type: PTSF (max stress specified)

Orientation: T-S

Frequency: 2 Hz

Environment: H.H.A.; RT

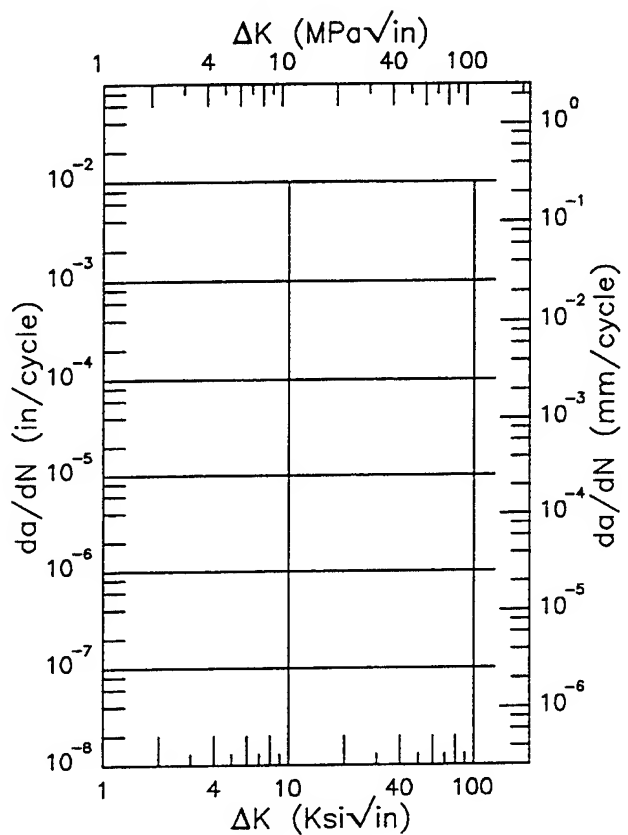
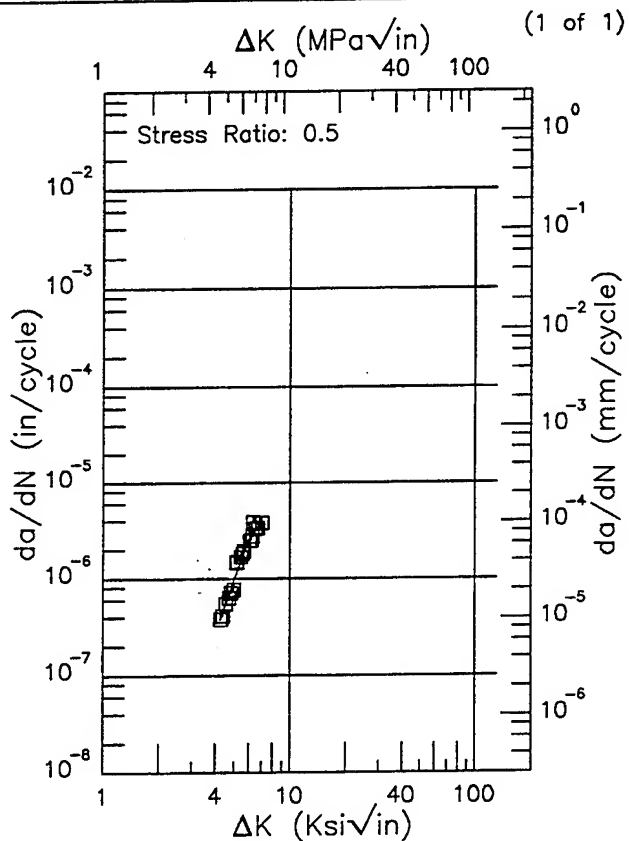
Yield Strength: 70.1 ksi

Ult. Strength: 73.5 ksi

Specimen Thk: 0.763 in.

Specimen Width: 5.004 in.

Ref: 90981



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.25 (min)	0.374
5.	0.955
6.	2.54
7.	3.78
7.02 (max)	3.81

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
--------------------------------------	-------------------------------

RMS %
Error
14.73

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.5.3.1.116

Condition/Ht: T852
Form: 3 in. Forging
Specimen Type: CT
Orientation: L-T
Stress Ratio: 0.08
Environment: DRY AIR; RT

Yield Strength: 53 ksi
Ult. Strength: 70 ksi
Specimen Thk: 1 - 1.002 in.
Specimen Width: 7.4 in.
Ref: 85837

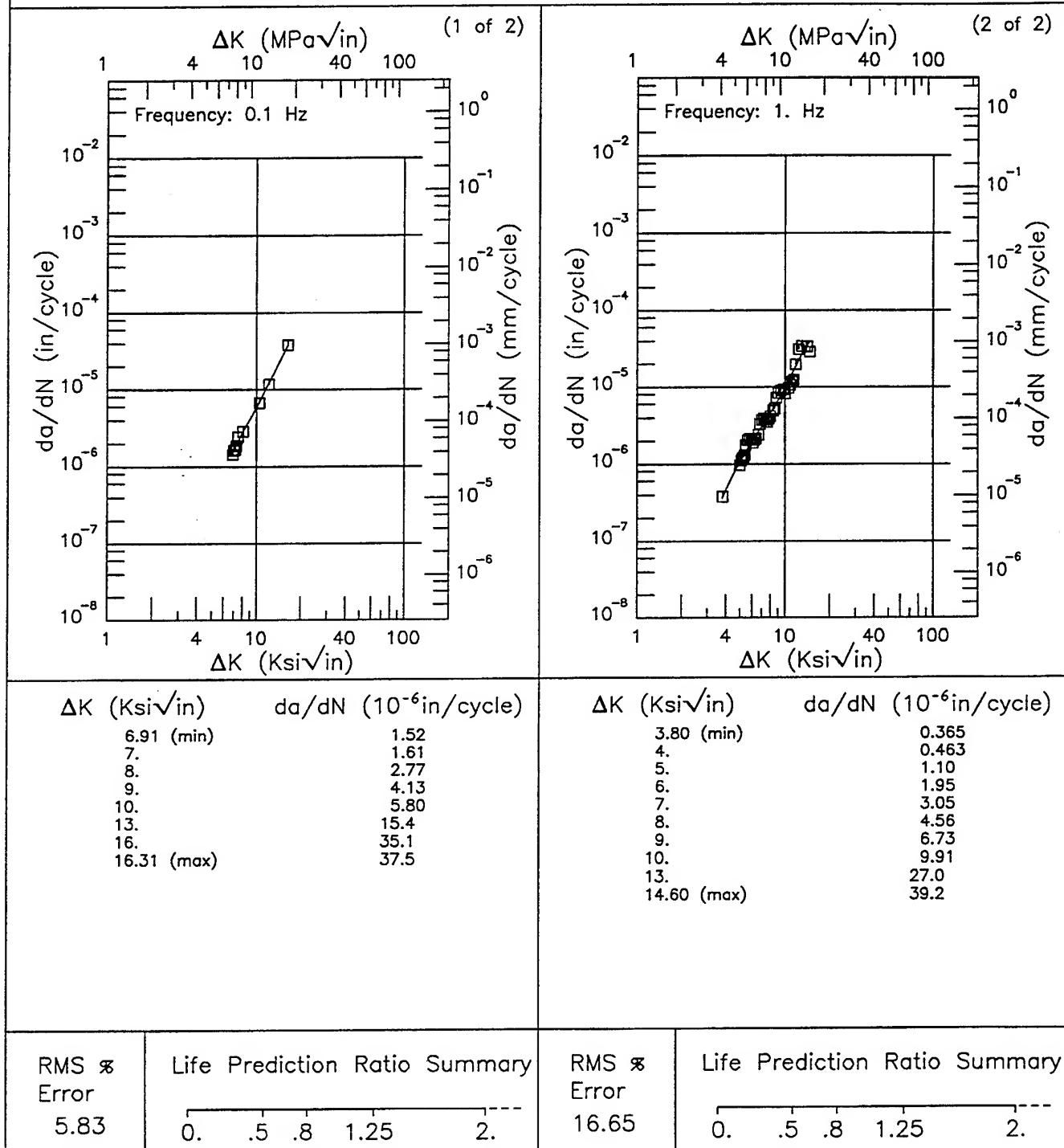


Figure 7.5.3.1.117

R 2024 |
 Condition/Ht: T852
 Form: 3 in. Forging
 Specimen Type: CT
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength: 53 ksi
 Ult. Strength: 68 – 70 ksi
 Specimen Thk: 0.5 – 0.502 in.
 Specimen Width: 7.4 in.
 Ref: 88579;85837

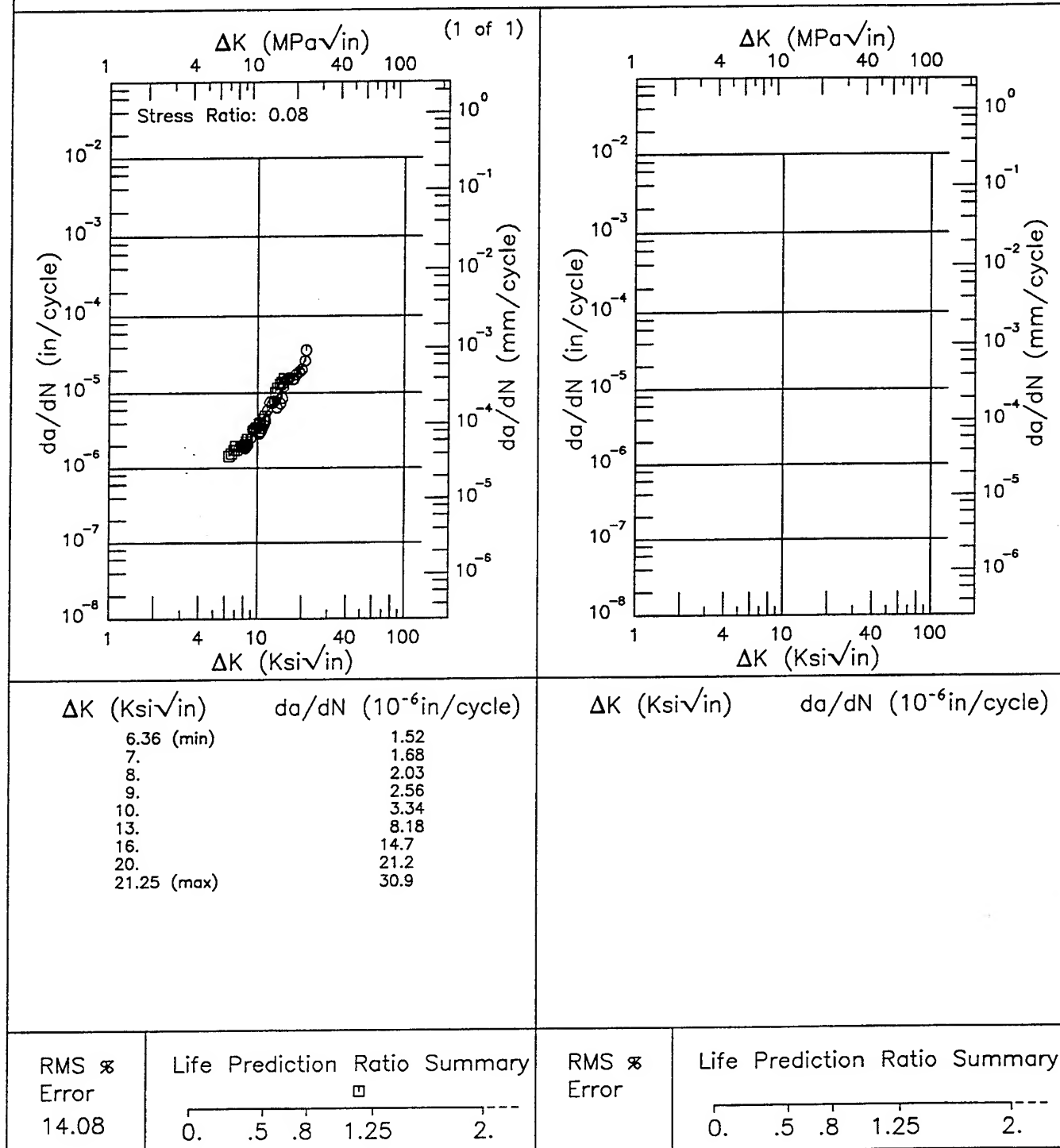


Figure 7.5.3.1.118

Condition/Ht: T852
 Form: 3 in. Forging
 Specimen Type: CT
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength: 53 ksi
 Ult. Strength: 68 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 7.4 in.
 Ref: 88579

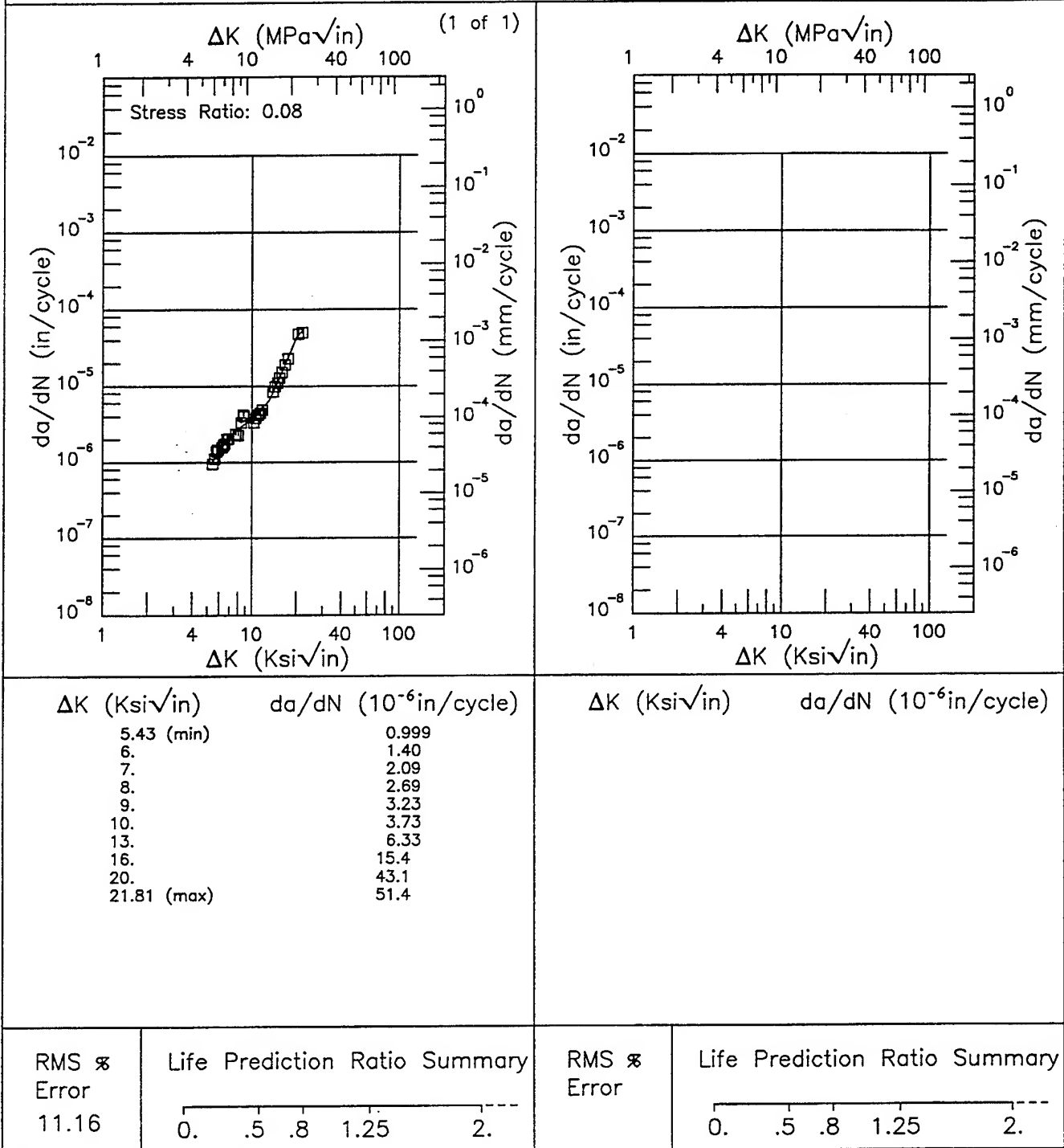


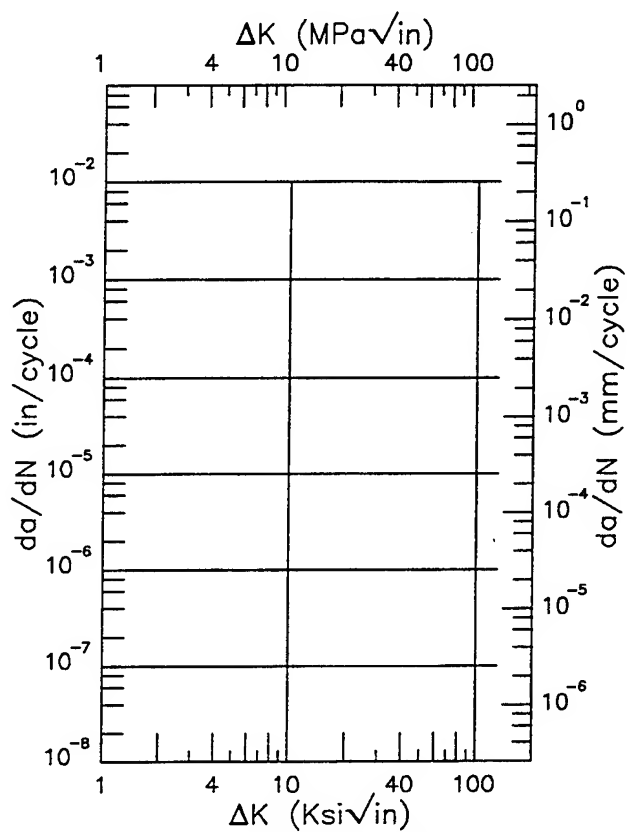
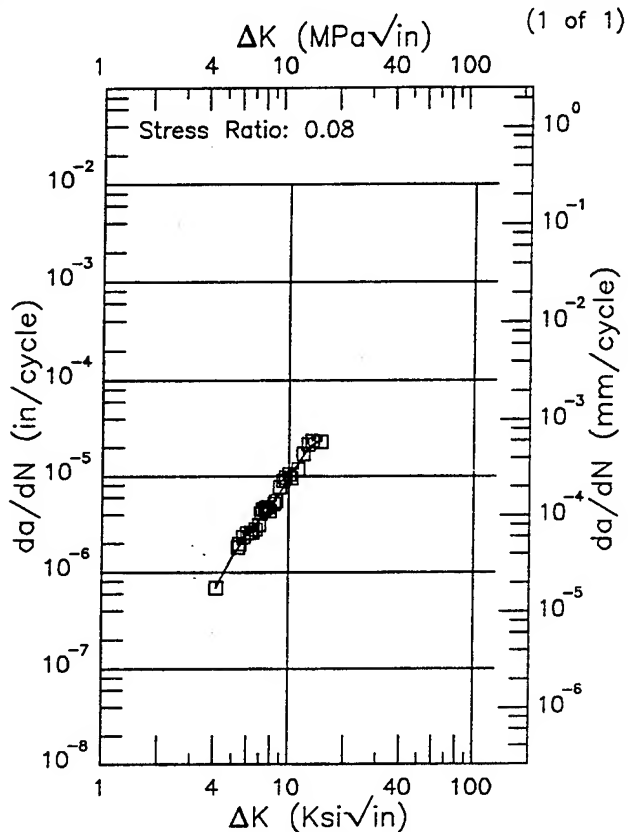
Figure 7.5.3.1.119

R

2024

Condition/Ht: T852
 Form: 3 in. Forging
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 Hz
 Environment: S.C.S.; RT

Yield Strength: 53 ksi
 Ult. Strength: 70 ksi
 Specimen Thk: 1.004 in.
 Specimen Width: 7.4 in.
 Ref: 85837



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.09 (min)	0.690
5.	1.47
6.	2.47
7.	3.62
8.	5.04
9.	6.95
10.	9.64
13.	20.7
14.86 (max)	23.9

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
--------------------------------------	-------------------------------

RMS %
 Error
 9.50

Life Prediction Ratio Summary
 0. .5 .8 1.25 2.---

RMS %
 Error

Life Prediction Ratio Summary
 0. .5 .8 1.25 2.---

Figure 7.5.3.1.120

Condition/Ht: T852
 Form: 3 in. Forging
 Specimen Type: CT
 Orientation: T-L
 Frequency: 6 Hz
 Environment: DRY AIR;265°F

Yield Strength: 54 ksi
 Ult. Strength: 68 ksi
 Specimen Thk: 0.999 in.
 Specimen Width: 7.4 in.
 Ref: 85837

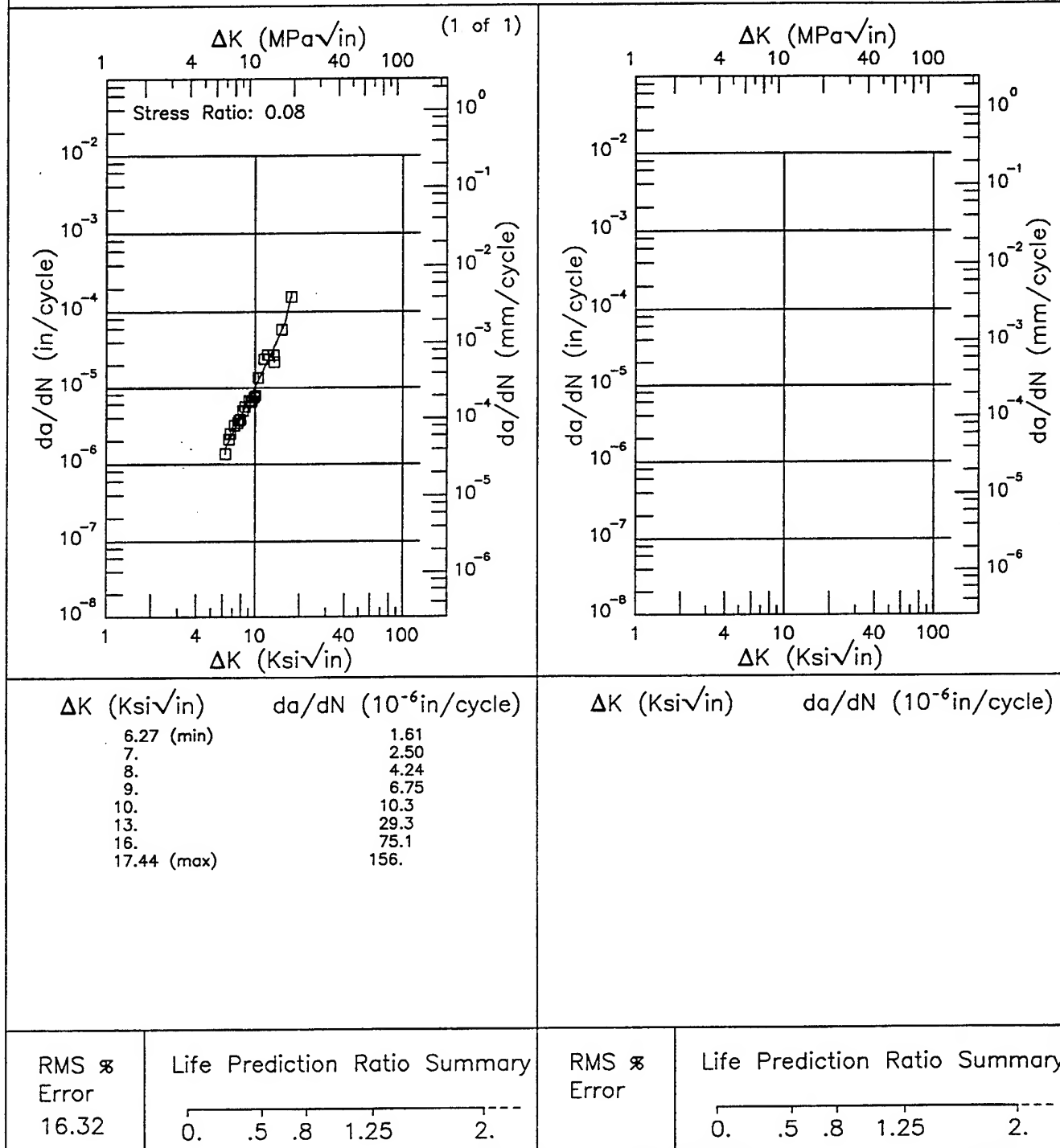


Figure 7.5.3.1.121

R

2024

Condition/Ht: T852
 Form: 3 in. Forging
 Specimen Type: CT
 Orientation: T-L
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 54 ksi
 Ult. Strength: 68 ksi
 Specimen Thk: 0.998 - 0.999 in.
 Specimen Width: 7.4 in.
 Ref: 85837

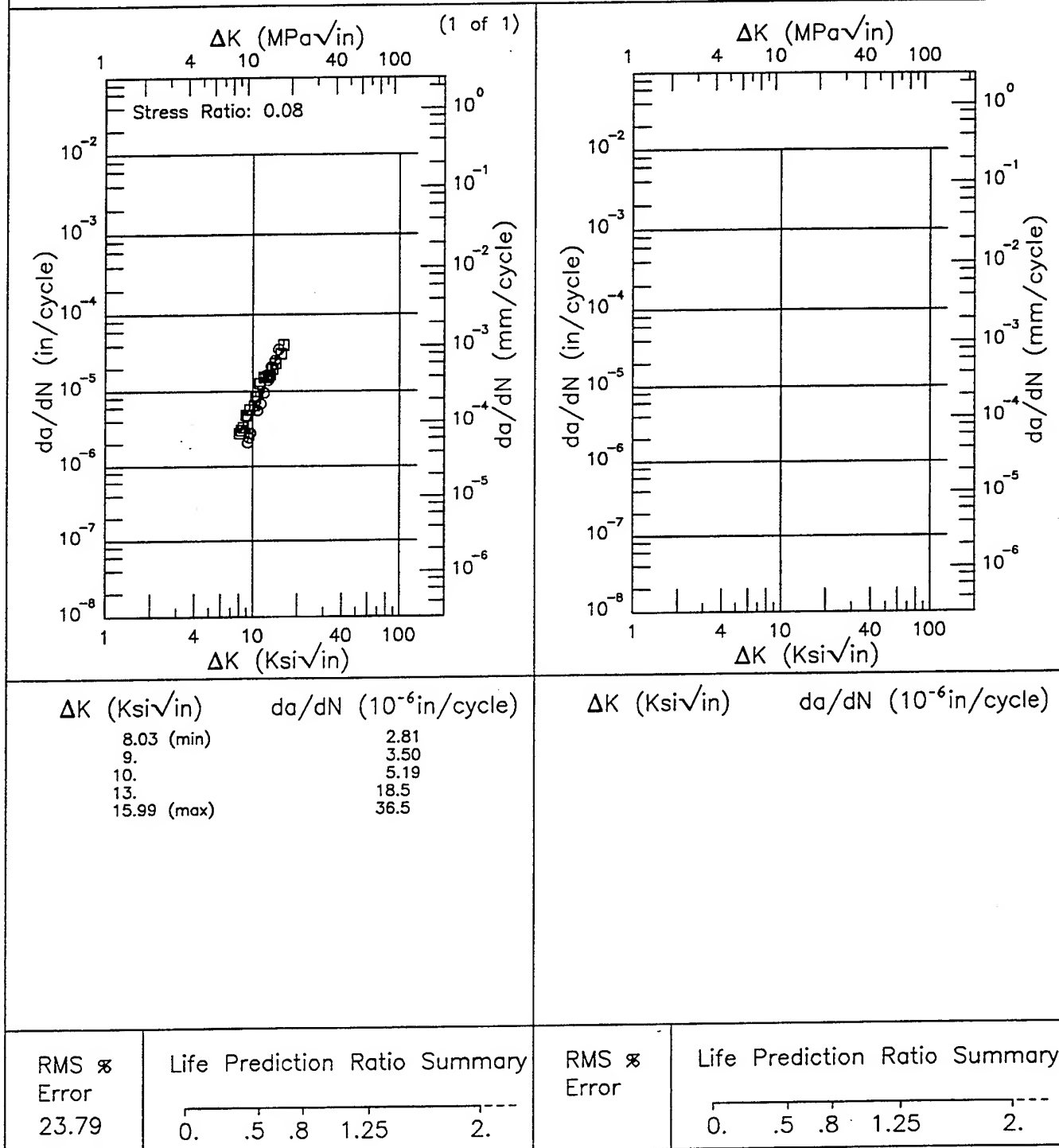


Figure 7.5.3.1.122

Condition/Ht: T852
 Form: 6 in. Forging
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 5.2 Hz
 Environment: LAB AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.75 in.
 Specimen Width: 3 in.
 Ref: 77720

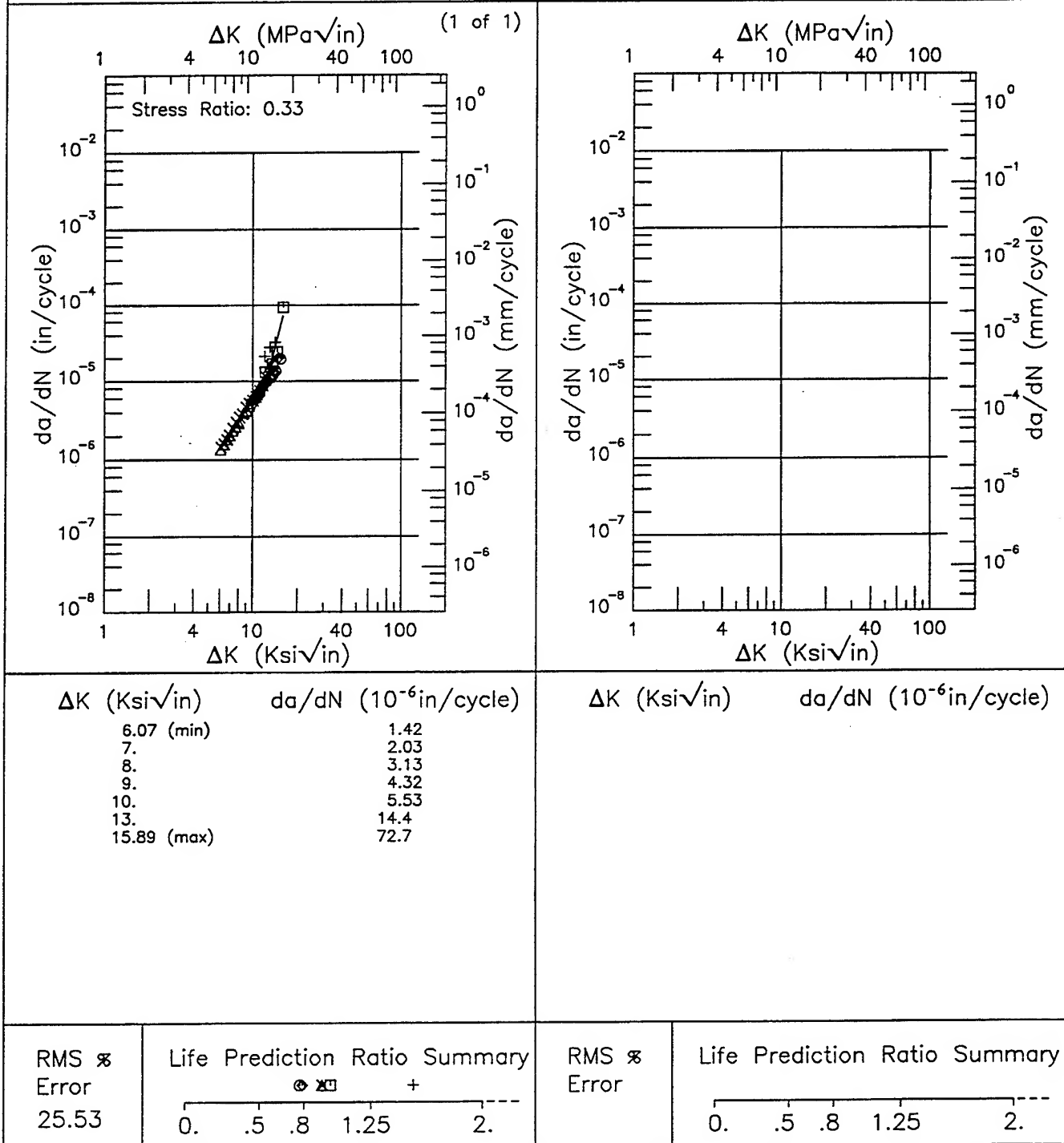
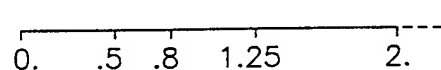


Figure 7.5.3.1.123

Yield Strength: 73 ksi
Ult. Strength: 76.6 ksi
Specimen Thk: 0.09 in.
Specimen Width: 5 in.
Ref: 88578



Condition/Ht: T861
 Form: 0.09 in. Sheet
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.08
 Environment: LAB AIR; RT

Yield Strength: 73 ksi
 Ult. Strength: 76.6 ksi
 Specimen Thk: 0.09 in.
 Specimen Width: 5 in.
 Ref: 88578

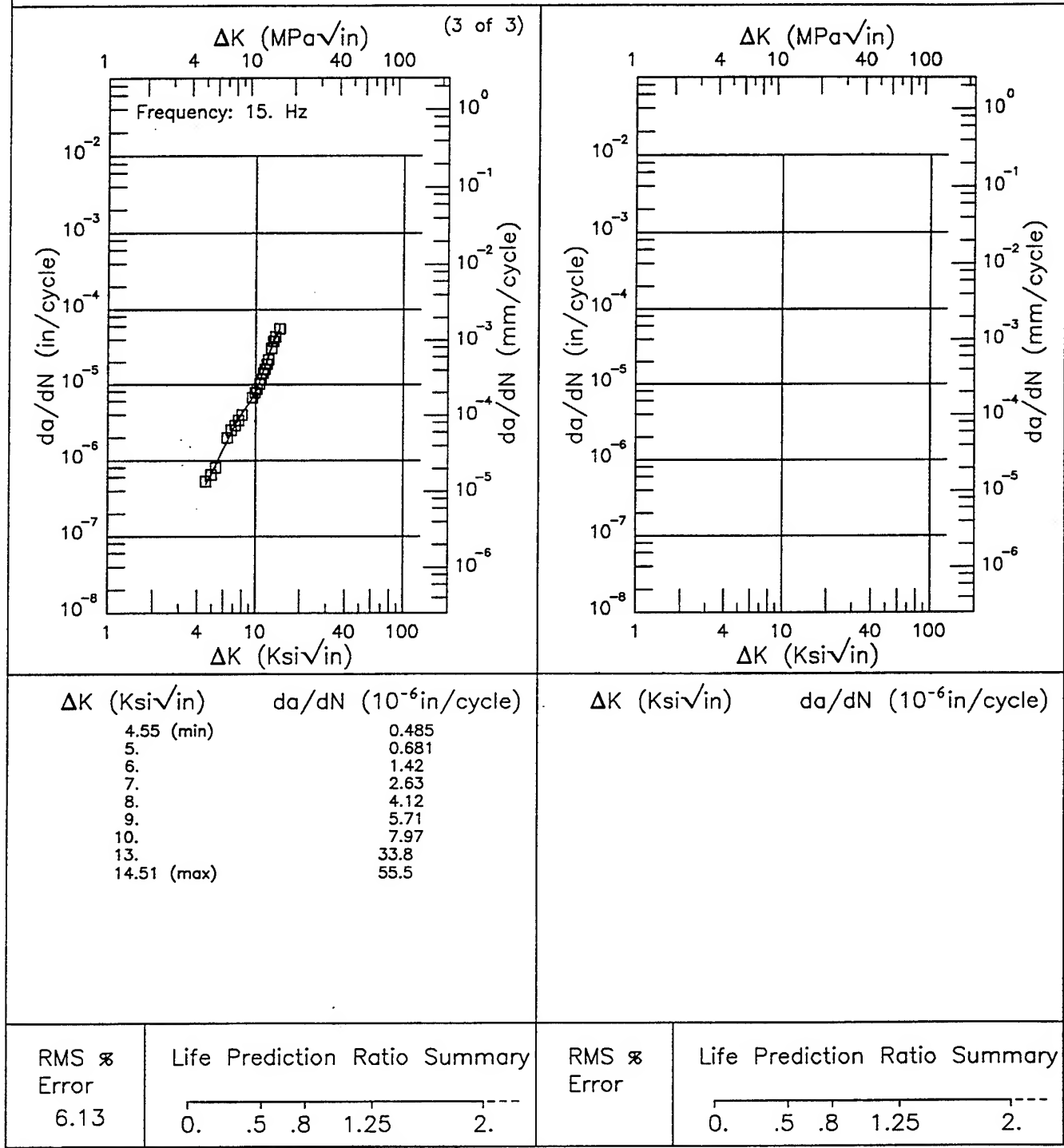


Figure 7.5.3.1.124 (Concluded)

Condition/Ht: T861
 Form: 0.02 in. Sheet
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.1
 Environment: LAB AIR; RT

Yield Strength: 65.7 ksi
 Ult. Strength: 70.8 ksi
 Specimen Thk: 0.02 in.
 Specimen Width: 5 in.
 Ref: 88578

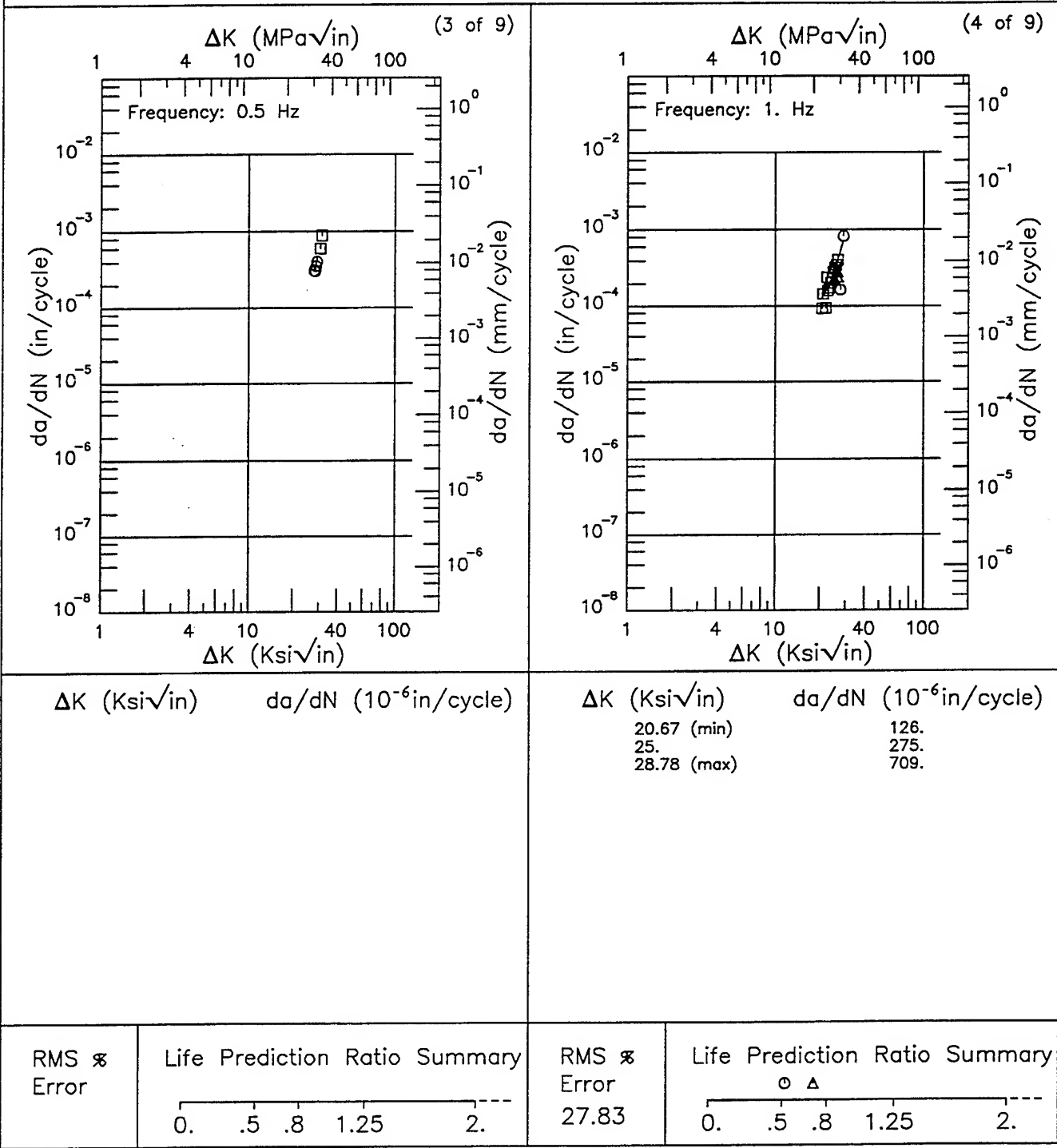
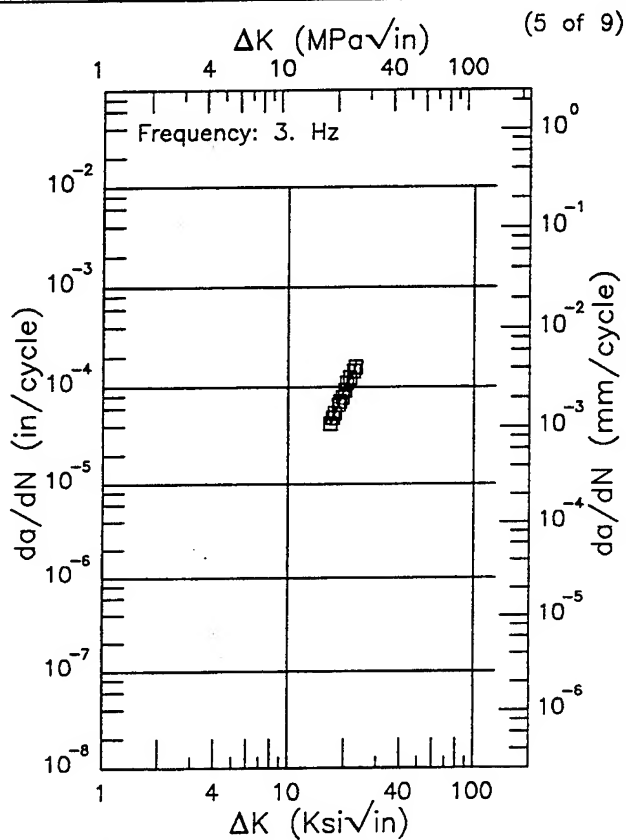


Figure 7.5.3.1.125 (Continued)

2024

Condition/Ht: T861
Form: 0.02 in. Sheet
Specimen Type: CT
Orientation: T-L
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 65.7 ksi
Ult. Strength: 70.8 ksi
Specimen Thk: 0.02 in.
Specimen Width: 5 in.
Ref: 88578



Condition/Ht: T861
 Form: 0.02 in. Sheet
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.1
 Environment: LAB AIR; RT

Yield Strength: 65.7 ksi
 Ult. Strength: 70.8 ksi
 Specimen Thk: 0.02 in.
 Specimen Width: 5 in.
 Ref: 88578

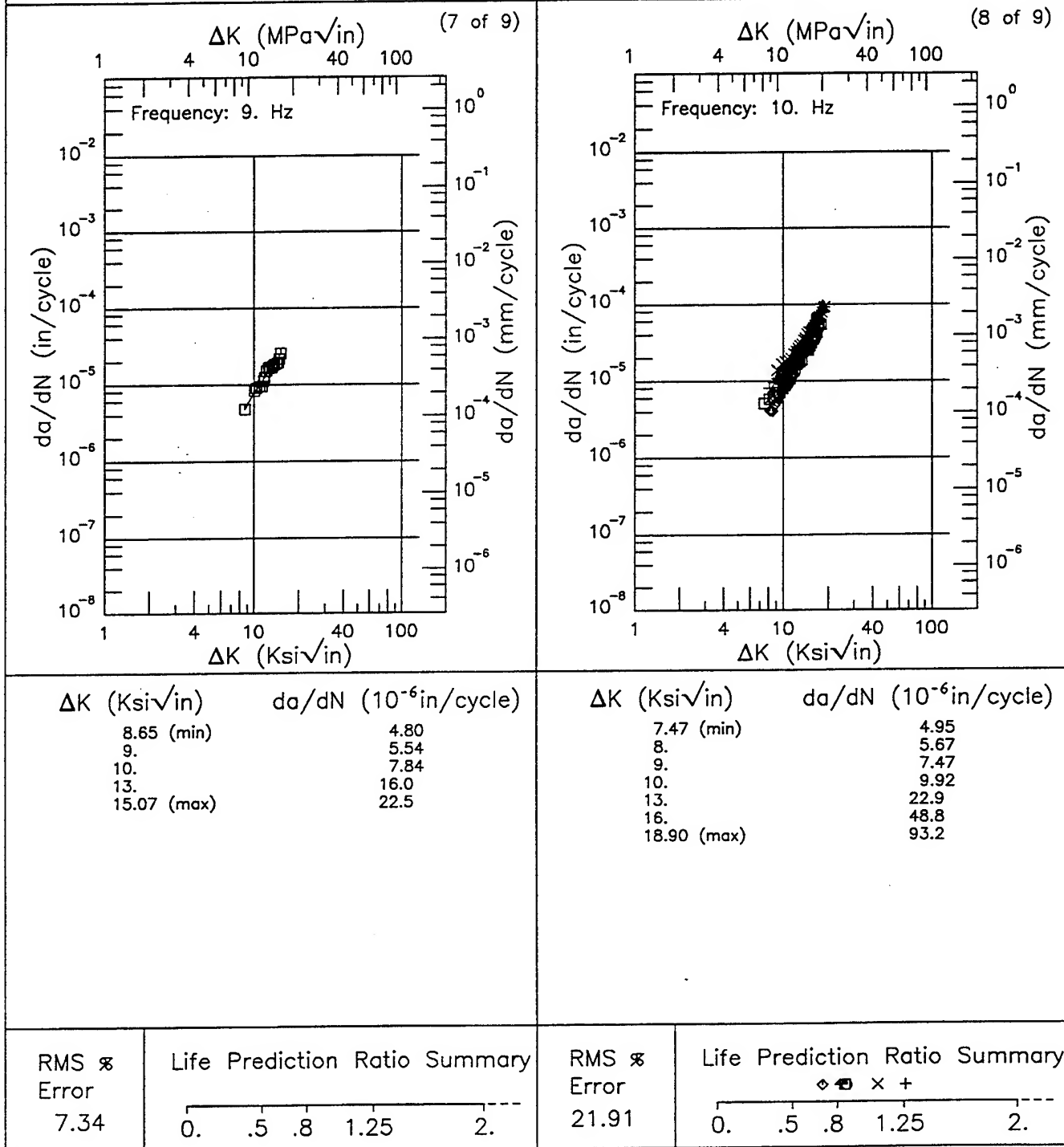


Figure 7.5.3.1.125 (Continued)

F

2024

Condition/Ht: T861
Form: 0.02 in. Sheet
Specimen Type: CT
Orientation: T-L
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 65.7 ksi
Ult. Strength: 70.8 ksi
Specimen Thk: 0.02 in.
Specimen Width: 5 in.
Ref: 88578

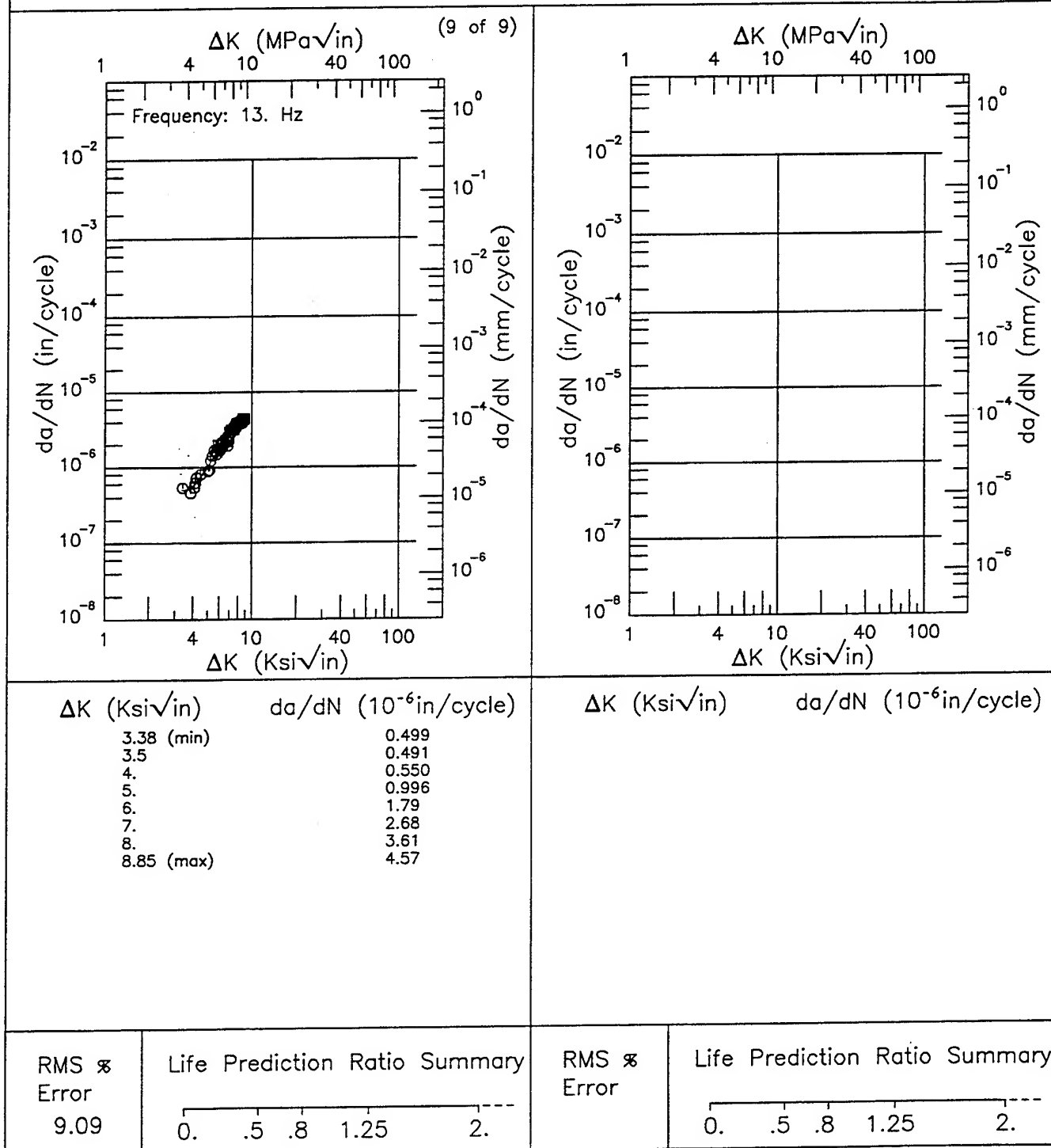


Figure 7.5.3.1.125 (Concluded)

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F

2024

Condition/Ht: T861
 Form: 0.09 in. Sheet
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.1
 Environment: LAB AIR; RT

Yield Strength: 73 ksi
 Ult. Strength: 76.6 ksi
 Specimen Thk: 0.09 in.
 Specimen Width: 5 in.
 Ref: 88578

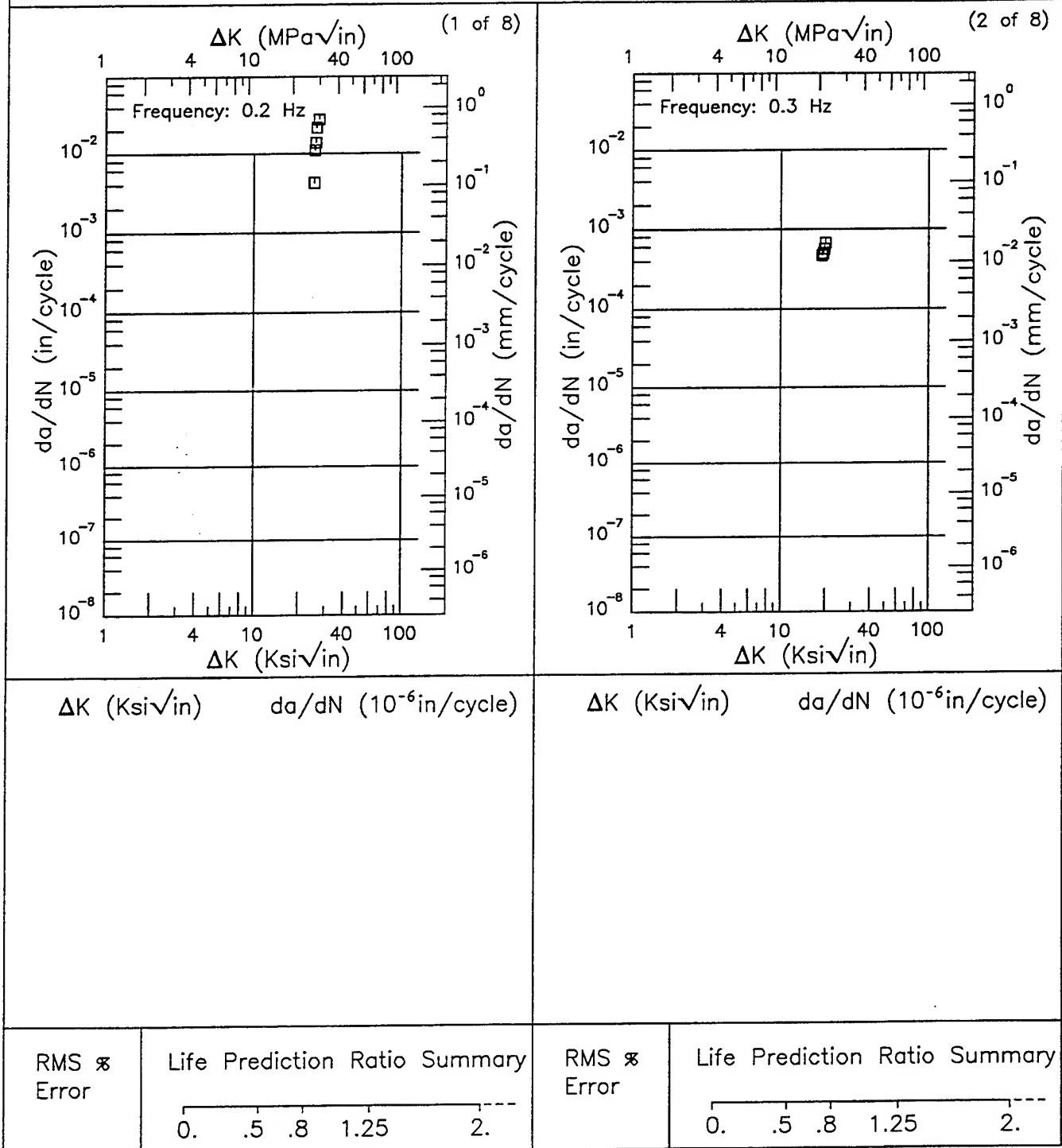


Figure 7.5.3.1.126

Condition/Ht: T861
 Form: 0.09 in. Sheet
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.1
 Environment: LAB AIR; RT

Yield Strength: 73 ksi
 Ult. Strength: 76.6 ksi
 Specimen Thk: 0.09 in.
 Specimen Width: 5 in.
 Ref: 88578

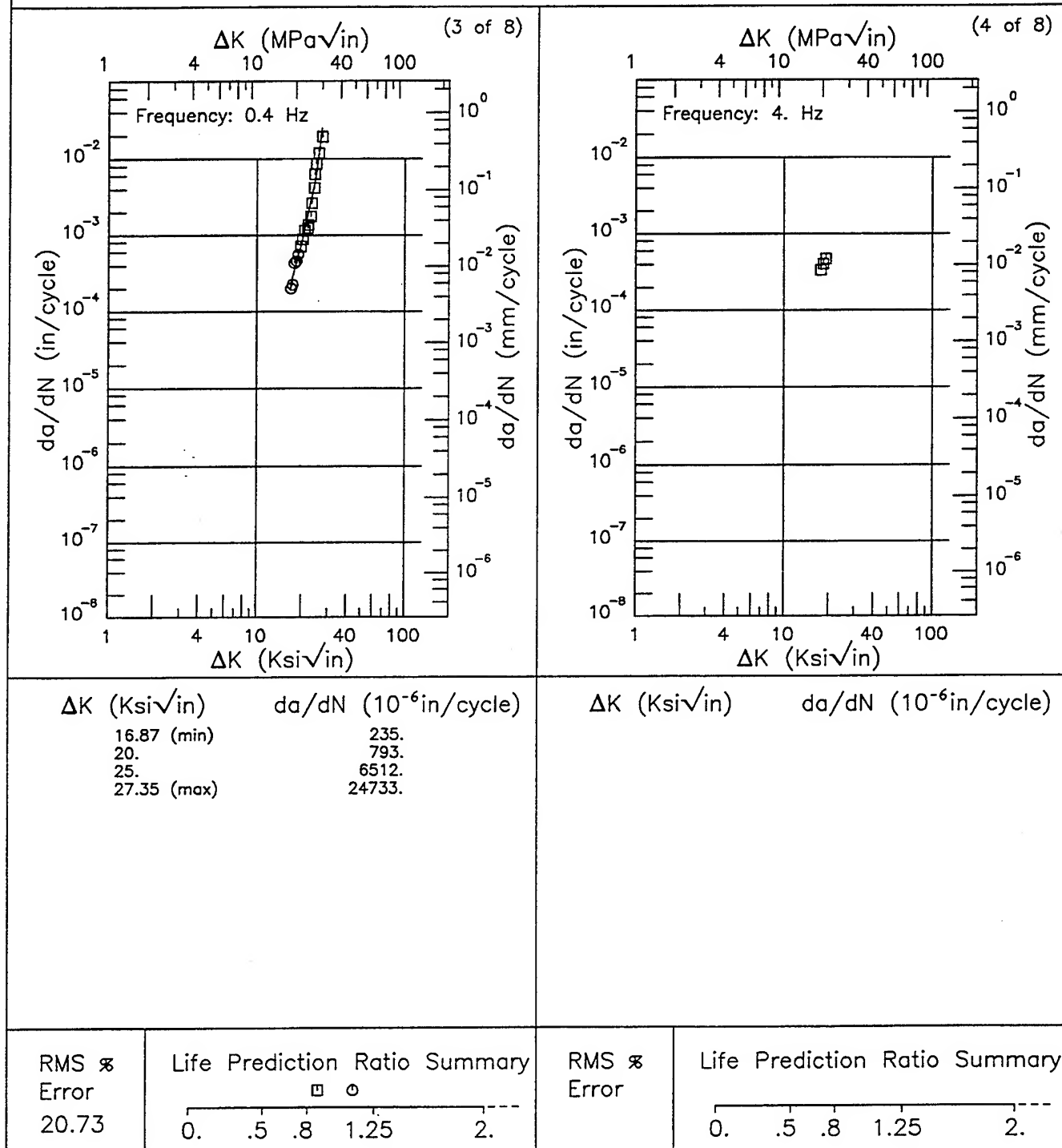
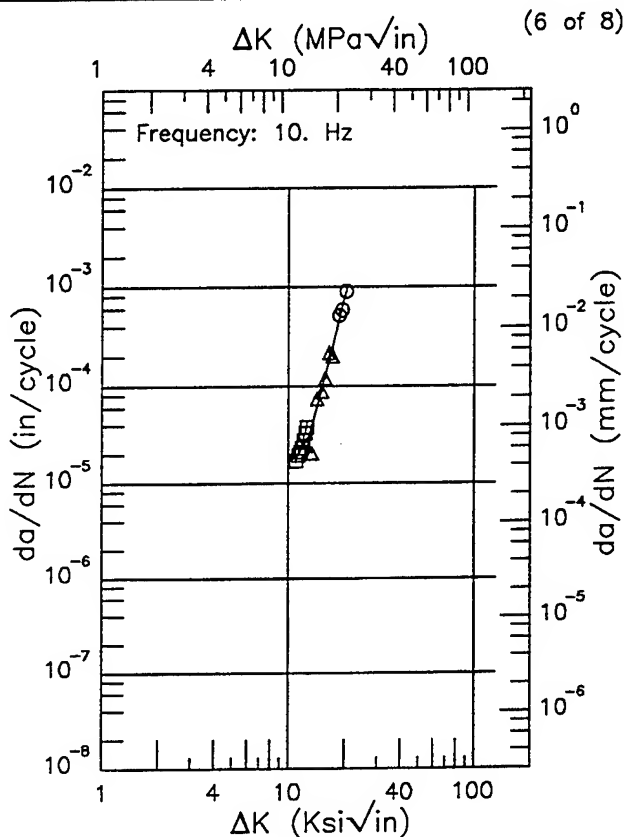
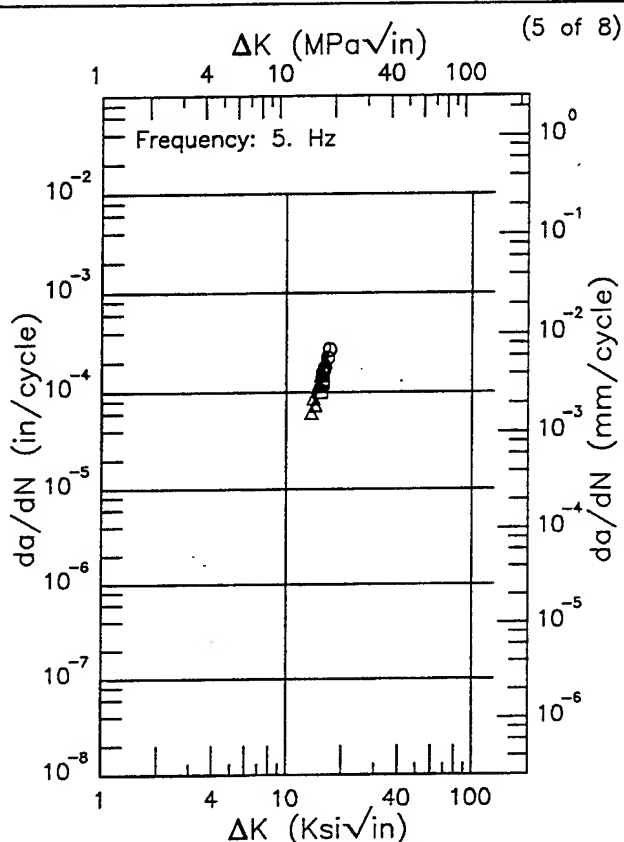


Figure 7.5.3.1.126 (Continued)

F 2024 |
 Condition/Ht: T861
 Form: 0.09 in. Sheet
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.1
 Environment: LAB AIR; RT

Yield Strength: 73 ksi
 Ult. Strength: 76.6 ksi
 Specimen Thk: 0.09 in.
 Specimen Width: 5 in.
 Ref: 88578



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
13.66 (min)	66.2
16.	175.
17.03 (max)	267.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
10.99 (min)	18.5
13.	31.7
16.	139.
20.	790.
20.30 (max)	902.

RMS \times
 Error
 11.79

Life Prediction Ratio Summary

□ ○

0. .5 .8 1.25 2.---

RMS \times
 Error
 18.39

Life Prediction Ratio Summary

△ □

0. .5 .8 1.25 2.---

Figure 7.5.3.1.126 (Continued)

Yield Strength: 73 ksi
Ult. Strength: 76.6 ksi
Specimen Thk: 0.09 in.
Specimen Width: 5 in.
Ref: 88578

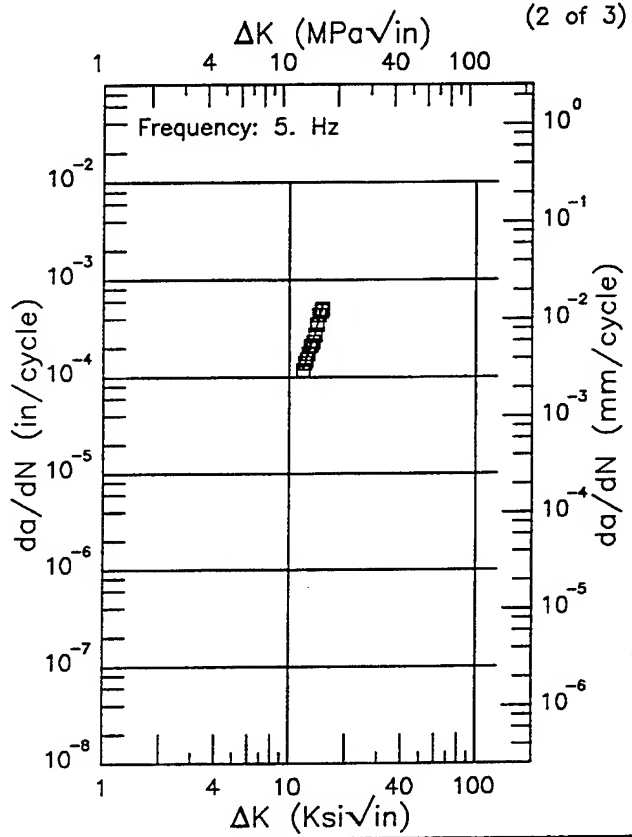
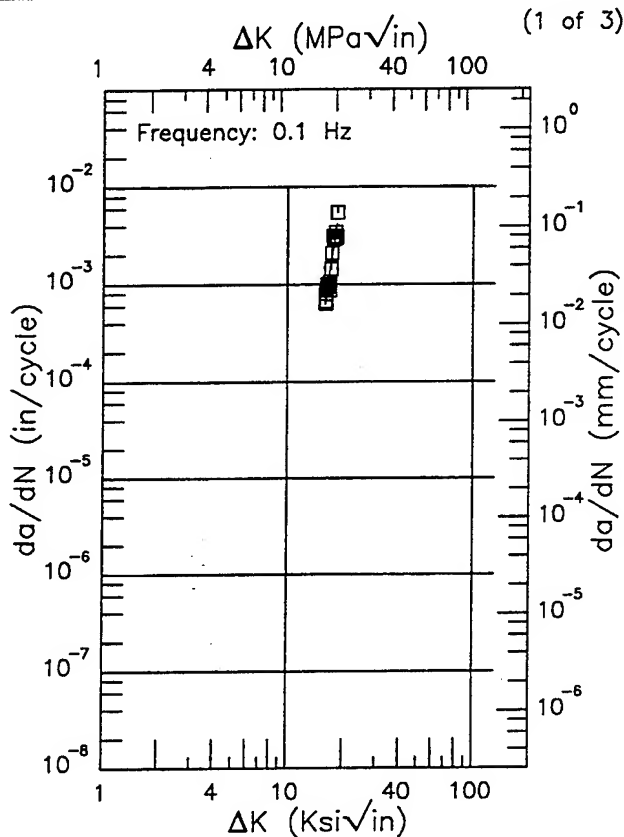


F

2024

Condition/Ht: T861
 Form: 0.09 in. Sheet
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.4
 Environment: LAB AIR; RT

Yield Strength: 73 ksi
 Ult. Strength: 76.6 ksi
 Specimen Thk: 0.09 in.
 Specimen Width: 5 in.
 Ref: 88578



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
15.86 (min)	633.
16.	723.
18.41 (max)	4157.

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
11.86 (min)	121.
13.	198.
15.02 (max)	536.

RMS %
 Error
 19.06

Life Prediction Ratio Summary

 0. .5 .8 1.25 2.

RMS %
 Error
 6.10

Life Prediction Ratio Summary

 0. .5 .8 1.25 2.

Figure 7.5.3.1.127

Condition/Ht: T861
 Form: 0.09 in. Sheet
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.4
 Environment: LAB AIR; RT

Yield Strength: 73 ksi
 Ult. Strength: 76.6 ksi
 Specimen Thk: 0.09 in.
 Specimen Width: 5 in.
 Ref: 88578

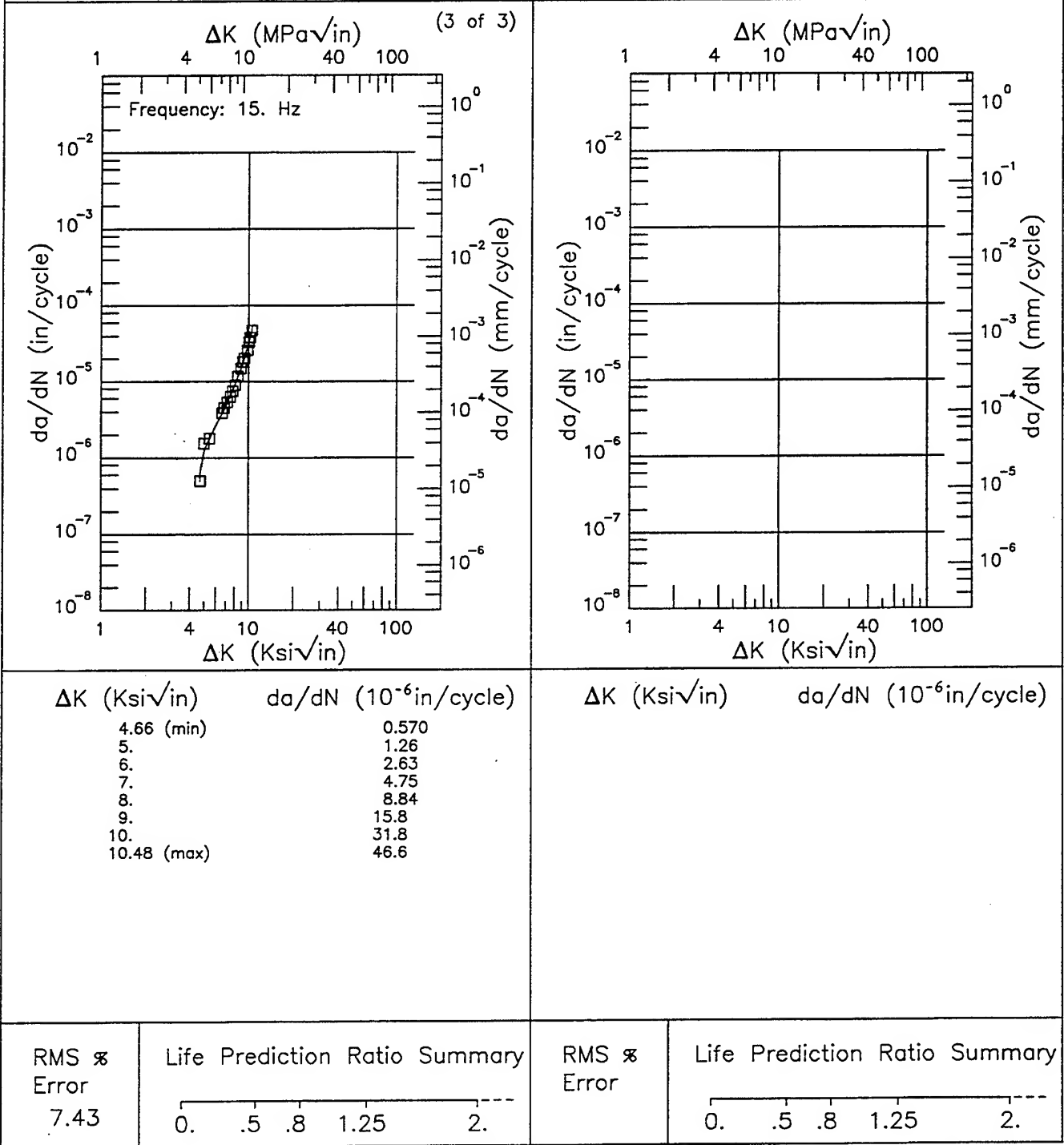
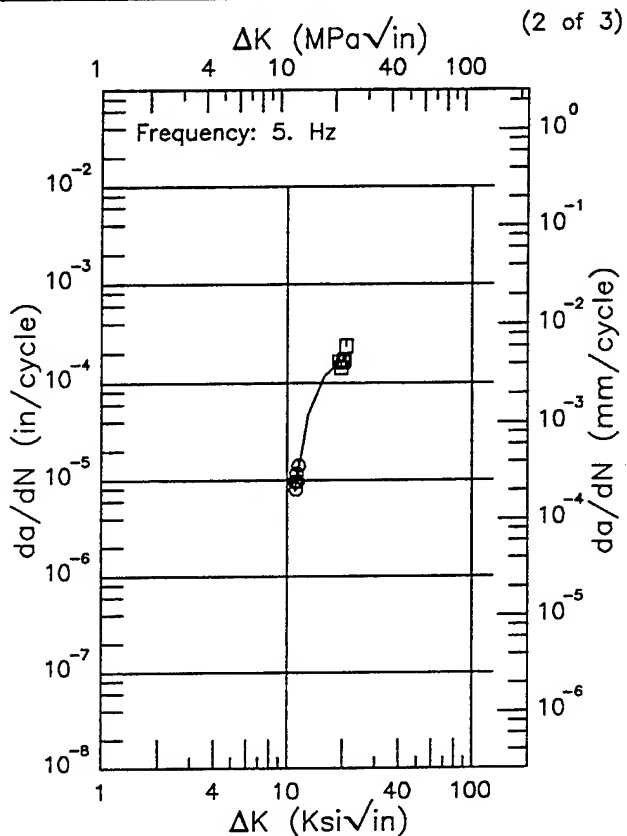
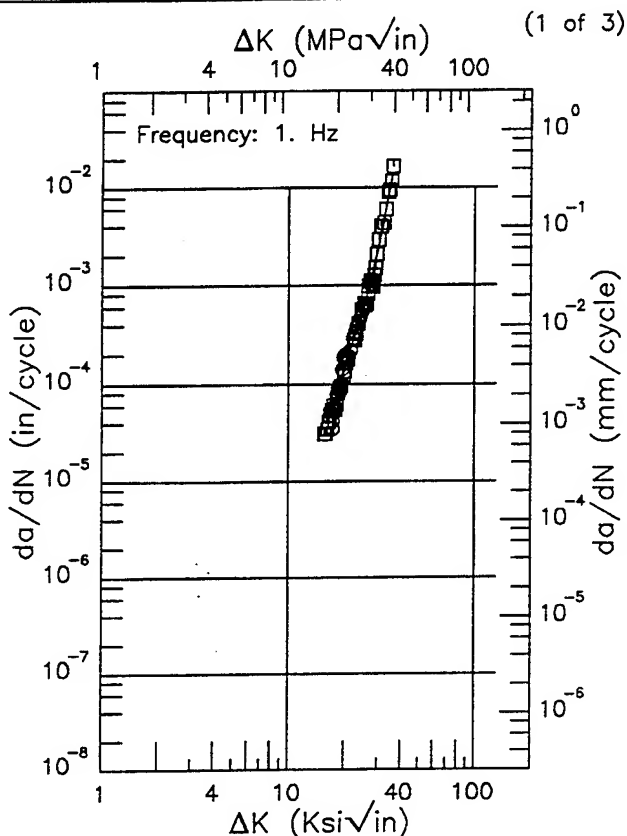


Figure 7.5.3.1.127 (Concluded)

F 2024

Condition/Ht: T861
 Form: 0.25 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.1
 Environment: LAB AIR; RT

Yield Strength: 70.6 ksi
 Ult. Strength: 74.9 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 5 in.
 Ref: 88578



ΔK (Ksi√in)	da/dN (10 ⁻⁶ in/cycle)
15.55 (min)	30.5
16.	34.1
20.	154.
25.	542.
30.	2247.
35.	10814.
36.01 (max)	13922.

ΔK (Ksi√in)	da/dN (10 ⁻⁶ in/cycle)
11.03 (min)	7.63
13.	47.1
16.	116.
20.	173.
20.92 (max)	197.

RMS %
 Error
 12.94

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error
 14.64

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.5.3.1.128

Condition/Ht: T861
 Form: 0.25 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.1
 Environment: LAB AIR; RT

Yield Strength: 70.6 ksi
 Ult. Strength: 74.9 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 5 in.
 Ref: 88578

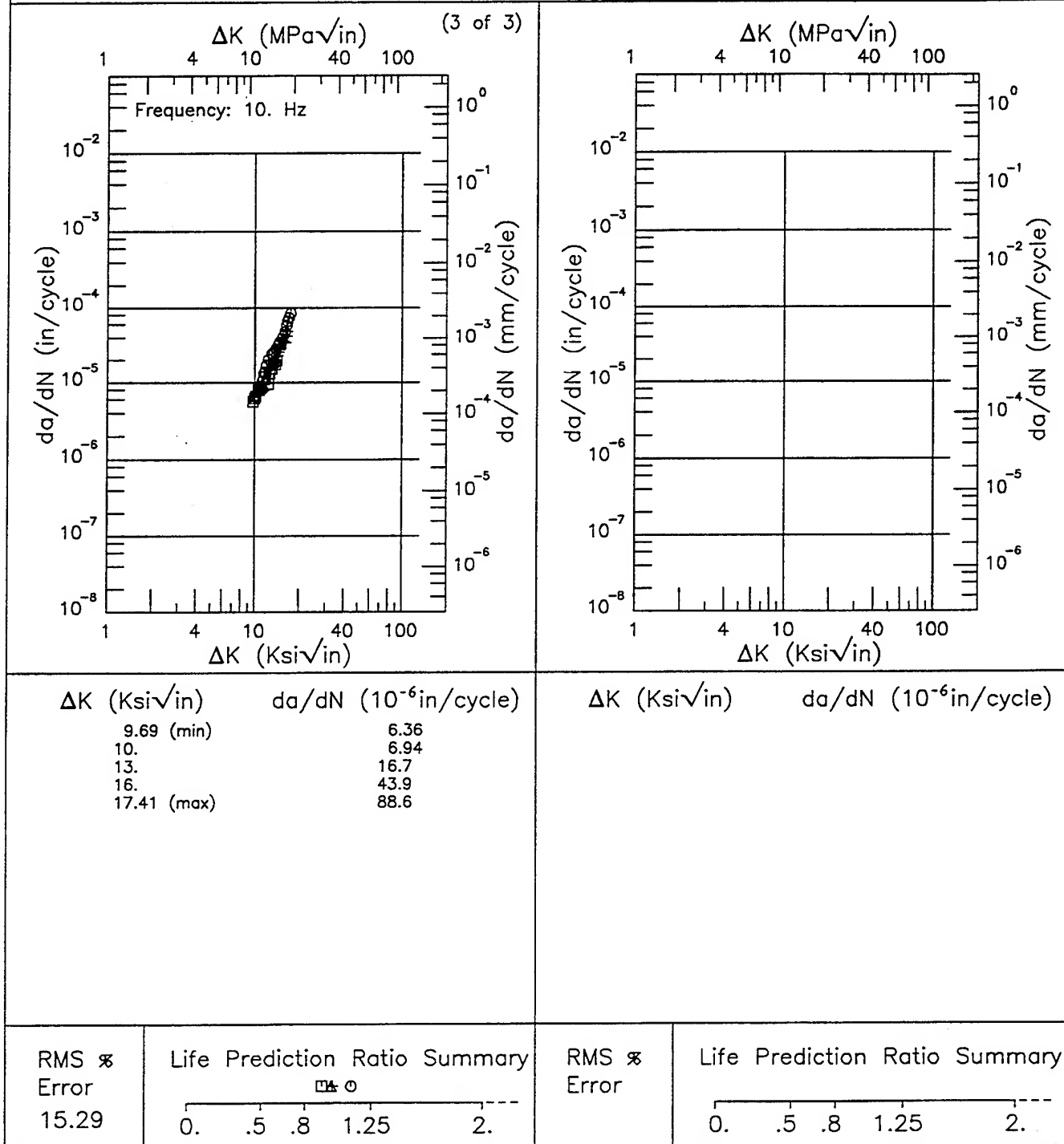
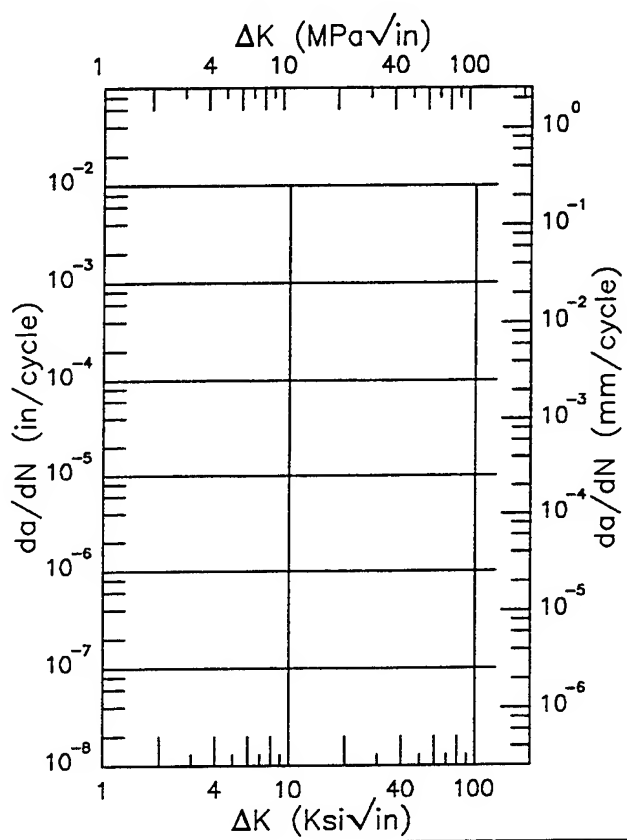
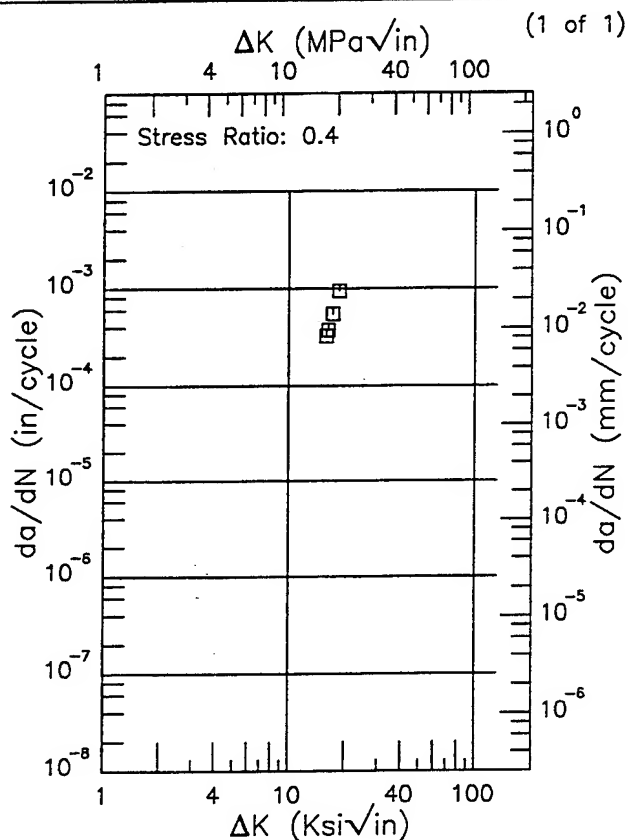


Figure 7.5.3.1.128 (Concluded)

R 2024

Condition/Ht: T861
 Form: 0.25 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 2 - 5 Hz
 Environment: LAB AIR; RT

Yield Strength: 70.6 ksi
 Ult. Strength: 74.9 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 5 in.
 Ref: 88578



ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

RMS %
Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

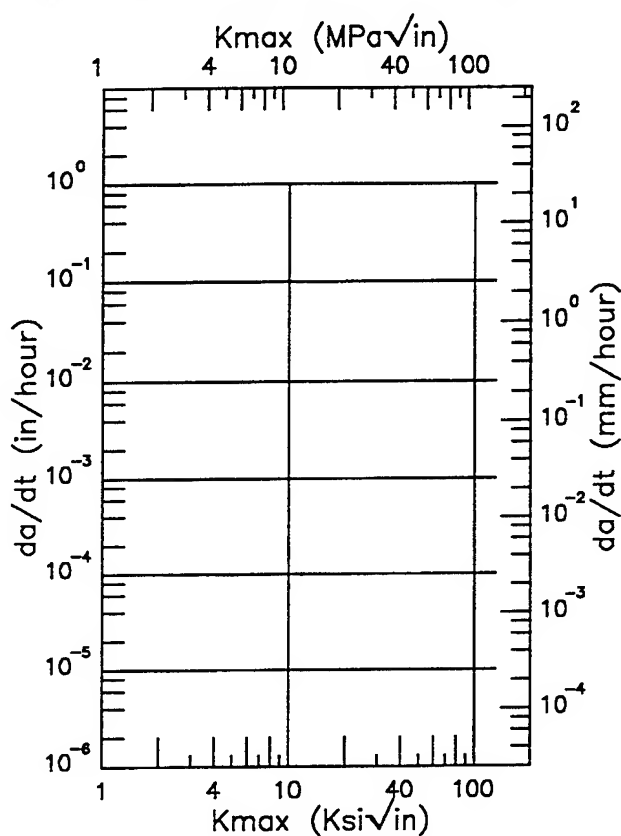
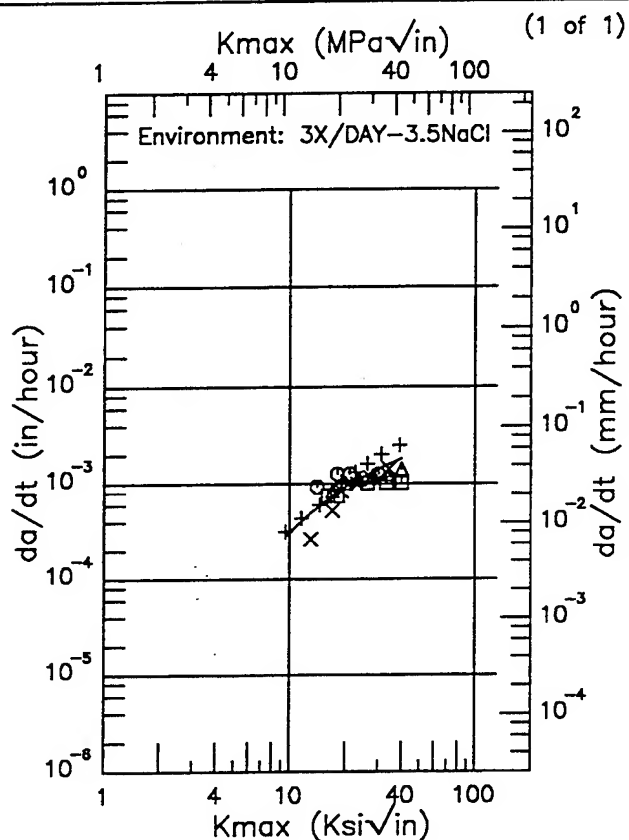
Figure 7.5.3.1.129

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2024

Condition/Ht: T351
 Form: 1 - 2 in. Plate
 Specimen Type: DCB
 Orientation: S-L
 Yield Strength:
 Ult. Strength:

Specimen Thk: 1 in.
 Specimen Width: 5 in.
 A₀:
 K_{Isc}:
 Ref: 78313;84284



Kmax (Ksi√in)	da/dt (10 ⁻³ in/hour)
9.50 (min)	0.284
10.	0.313
13.	0.496
16.	0.682
20.	0.920
25.	1.19
30.	1.43
35.	1.64
40.00 (max)	1.82

Kmax (Ksi√in) da/dt (10⁻³in/hour)

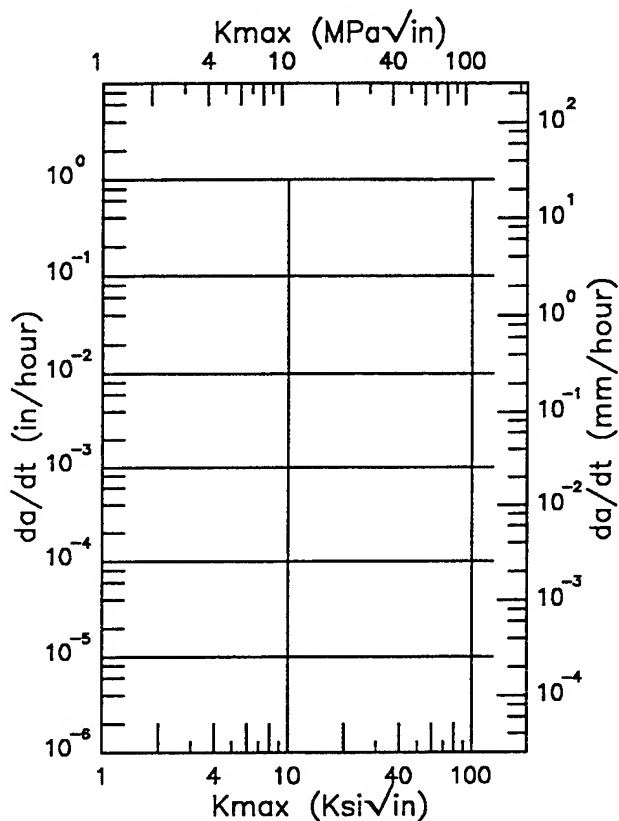
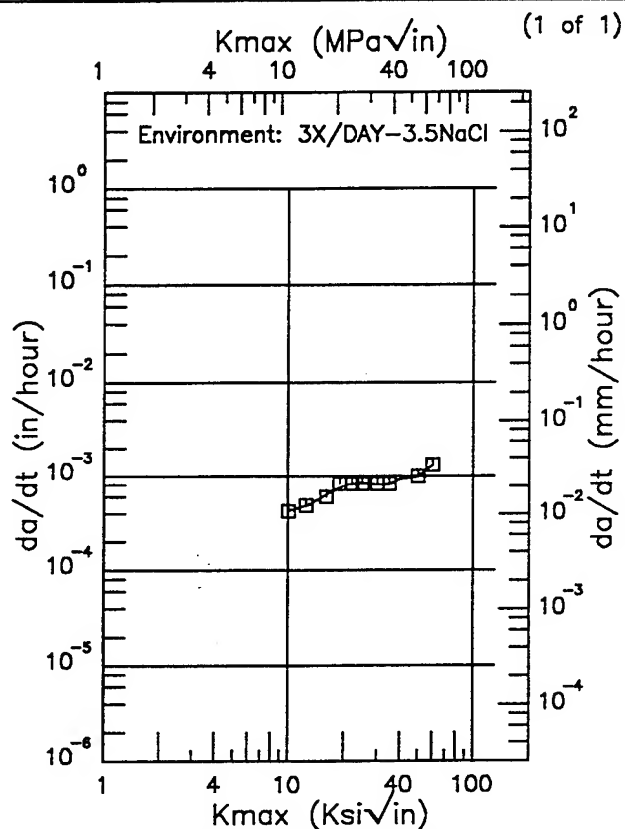
RMS %
 Error
 27.59

RMS %
 Error

Figure 7.5.3.2.1

Condition/Ht: T4
Form: Forging
Specimen Type: DCB
Orientation: S-L
Yield Strength:
Ult. Strength:

Specimen Thk: 1 in.
Specimen Width: 5 in.
A₀:
K_I_{scc}:
Ref: 78313



K _{max} (Ksi√in)	da/dt (10 ⁻³ in/hour)
10.00 (min)	0.423
13.	0.492
16.	0.629
20.	0.795
25.	0.843
30.	0.805
35.	0.823
40.	0.919
50.	0.980
60.00 (max)	1.30

K_{max} (Ksi√in) da/dt (10⁻³in/hour)

RMS %
Error
3.35

RMS %
Error

Figure 7.5.3.2.2

TABLE 7.5.3.3
K_{Iacc} SUMMARY FOR ALUMINUM ALLOY 2024

Condition/ Heat Treat	Prod Form	Test Temp (°F)	Spec Or.	Yield Str (Ksi)	Environment	Specimen			Crack (in)	K _Q (Ksi√in)	K _{Iacc} (Ksi√in)	Test Time (min)	Test Date	Reference
						Thick (in)	Design	Width (in)						
T351	P	R.T.	S-L	47	3.5% NaCl	1	DCB	5	---	50	10	---	1969	78313
					Industrial Atm	1	CT	2	---	21.2	10	---	1973	86688
					Salt-Dichromate-Acetate	1	CT	2	---	21.2	9	---	1973	86688
					Seacoast Atm	1	CT	2	---	21.2	10	---	1973	86688
T352	F	R.T.	S-L	43.3	Seawater	0.7	DCB	1.4	---	27.6	23*	---	1972	82676
					3.5% NaCl	1.25	TDCB	5	---	18.6	21.5	---	1971	84360
					Air 78% RH	1.25	TDCB	5	---	18.6	22.7	---	1971	84360
					Dist Water	1.25	TDCB	5	---	18.6	22	---	1971	84360
T851	P	R.T.	S-L	59.3	JP-4 Fuel	1.25	TDCB	5	---	18.6	21.6	---	1971	84360
					Industrial Atm	1	CT	2	---	16.7	16	---	1973	86688
					Salt-Dichromate-Acetate	1	CT	2	---	16.7	15	---	1973	86688
					Seacoast Atm	1	CT	2	---	16.7	16	---	1973	86688
T852	F	R.T.	L-T	53	S.C.S.	1	DCB	5.5	---	34	22.1	64920	1976	RI006
						1	DCB	5.5	---	34	34*	61680	1976	RI006
						1	DCB	5.5	---	37	22.5	76140	1976	RI006
						1	DCB	5.5	---	37	>23.5	76140	1976	RI006
T852	F	R.T.	L-T	58	S.T.W.	1	DCB	5.5	---	37	22.5	76140	1976	RI006
						1	DCB	5.5	---	37	22.5	76140	1976	RI006

TABLE 7.5.3.3 (CONCLUDED)

(2 of 2)

K_{Isc} SUMMARY FOR ALUMINUM ALLOY 2024

Condition/ Heat Treat	Prod Form	Test Temp (°F)	Spec Or.	Yield Str (Ksi)	Environment	Specimen			Crack (in)	K _Q (Ksi√in)	K _{Isc} (Ksi√in)	Test Time (min)	Test Date	Reference
						Thick (in)	Design	Width (in)						
T852 (cont'd)	F (cont'd)	R.T. (cont'd)	T-L	54	S.T.W.	1	DCB	5.5	3	34	19.8	133680	1976	R1006
						1	DCB	5.5	3	34	>21	133680	1976	R1006
						1	DCB	5.5	3	34	>21	133680	1976	R1006
						1	DCB	5.5	3	34	20.5	133680	1976	R1006
	S-L	---	S-L	---	S.T.W.	1	DCB	5.5	3	37	20	133680	1976	R1006
						1	DCB	5.5	3	37	>13.5	133680	1976	R1006
						0.7	CANT	1.4	6	17.6	14	---	1972	82675

* specimen thickness does not meet minimum requirements of $2.5 \left(\frac{K_{Isc}}{\sigma_y} \right)^2$

TABLE 7.6.1.2
1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2024 (ALCLAD) AT ROOM TEMPERATURE

ORIENTATION: T-L		ENVIRONMENT: Lab Air							
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T3	SHEET	0.	13.3			3.52	21.01		
		0.33	13.3			7.14	62.46		

TABLE 7.6.2.2

ALUMINUM 2024 (ALCLAD) K_C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K_{app}			K_C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) $2a_1$	FINAL (in.) $2a_2$	ONSET (Ksi) σ_o	MAX (Ksi) σ_{max}	K_{app} (Ksi√in.)	K_{app} MEAN	STAN DEV	K_C (Ksi√in.)	K_C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																			
T3	Sheet	0.08	R.T.	L-T	50.1	5.900	0.079	1.580	1.890	31.90	37.30	61.50*			68.66*			1966	84366
		0.08			50.1	5.900	0.079	1.580	1.890	32.60	37.30	61.50*			68.66*			1966	84366
		0.08			50.1	5.900	0.079	1.180	---	---	41.20	57.52*			---			1966	84366
		0.08			50.1	5.900	0.079	0.790	1.020	43.00	46.00	51.82*			59.32*			1966	84366
		0.08			50.1	5.900	0.079	0.790	---	42.30	46.10	51.93*			---			1966	84366
		0.08			50.1	5.900	0.079	3.150	3.540	19.40	22.50	61.21*			69.20*			1966	84366
		0.08			50.1	5.900	0.079	3.150	3.460	17.60	22.10	60.13*			66.25*			1966	84366
		0.08			50.1	5.900	0.079	1.180	1.380	35.60	41.20	57.52*			62.79*			1966	84366
		0.08			50.1	5.900	0.079	0.790	0.980	42.70	45.90	51.70*			57.94*			1966	84366
		0.08			50.1	5.900	0.079	1.580	2.120	---	37.30	61.50*			74.05*			1966	84366
		0.08	50.4		5.900	0.079	0.790	1.140	---	43.70	49.23*	59.86*			1966			84366	
		0.08	50.4		5.900	0.079	1.580	2.120	---	36.00	59.36*	71.47*			1966			84366	
		0.08	50.4		5.900	0.079	0.790	1.220	40.30	43.90	49.45*	62.43*			1966			84366	
		0.08	50.4		5.900	0.079	1.580	2.010	33.30	36.20	59.69*	69.35*			1966			84366	
		0.08	50.4		5.900	0.079	3.150	3.540	15.90	21.40	58.22*	65.82*			1966			84366	
		0.08	50.4		5.900	0.079	3.150	3.540	17.20	21.40	58.22*	65.82*			1966			84366	
		0.08	50.4		5.900	0.079	1.180	1.610	36.70	40.30	56.26*	67.20*			1966			84366	
		0.08	50.4		5.900	0.079	1.180	1.500	36.60	40.10	55.98*	64.13*			1966			84366	
		0.08	50.4		5.900	0.079	1.180	1.610	35.20	39.80	55.56*	66.37*			1966			84366	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																		
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C		DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _i	MAX (Ksi) σ _{max}	K _{max} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN			STAN DEV
BUCKLING OF CRACK EDGES RESTRAINED																		
T3 Cont'd	Sheet Cont'd	0.08	R.T. Cont'd	L-T Cont'd	50.4	5.900	0.079	1.580	2.120	30.80	35.90	59.20*	Cont'd	Cont'd	Cont'd	71.27*	1966	84366
		0.08			50.4	5.900	0.079	0.790	1.180	39.30	43.10	48.55*				60.17*	1966	84366
		0.08			51.8	5.900	0.079	3.150	3.580	20.60	21.30	57.95*				66.37*	1966	84366
		0.08			51.8	5.900	0.079	1.180	1.580	34.60	40.90	57.10*				67.44*	1966	84366
		0.08			51.8	5.900	0.079	0.790	1.220	45.30	46.20	52.04*				65.70*	1965	70485
		0.08			51.8	5.900	0.079	0.790	1.140	43.10	44.00	49.56*				60.27*	1965	70485
		0.08			51.8	5.900	0.079	3.150	3.500	19.60	20.50	55.77*				62.24*	1966	84366
		0.08			51.8	5.900	0.079	1.180	1.530	33.60	41.10	57.38*				66.49*	1966	84366
		0.08			51.8	5.900	0.079	0.390	0.630	49.50	50.00	39.24*				50.09*	1965	70485
		0.08			51.8	5.900	0.079	0.790	1.140	43.10	44.00	49.56*				60.27*	1966	84366
		0.08			51.8	5.900	0.079	3.150	3.500	19.60	20.50	55.77*				62.24*	1965	70485
		0.08			51.8	5.900	0.079	1.580	2.160	31.20	36.60	60.35*				73.59*	1966	84366
		0.08			51.8	5.900	0.079	1.580	2.050	29.60	37.00	61.01*				71.82*	1966	84366
		0.08			51.8	5.900	0.079	1.580	2.160	31.20	36.60	60.35*				73.59*	1965	70485
		0.08			51.8	5.900	0.079	0.790	1.220	45.30	46.20	52.04*				65.70*	1966	84366
		0.08			51.8	5.900	0.079	1.580	2.050	29.60	37.00	61.01*				71.82*	1965	70485
		0.08			51.8	5.900	0.079	3.150	3.500	20.20	21.20	57.68*				64.37*	1965	70485
		0.08			51.8	5.900	0.079	3.150	3.580	20.60	21.30	57.95*				66.37*	1965	70485
		0.08			51.8	5.900	0.079	0.790	1.140	46.30	46.90	52.83*				64.26*	1966	84366

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

3 of 16

ALUMINUM 2024 (ALCLAD) K_C																		
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K_{app}			K_C		DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K_{app} (Ksi/in.) K_{app}	STAN DEV	K_C (Ksi/in.) K_C	K_C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																		
T3 Cont'd	Sheet Cont'd	0.08	R.T. Cont'd	L-T Cont'd	51.8	5.900	0.079	0.790	1.140	46.20	46.80	52.72*	Cont'd	Cont'd	Cont'd	64.11*	1965	70485
		0.08			51.8	5.900	0.079	1.180	1.500	36.10	41.10	57.38*				65.73*	1966	84366
		0.08			51.8	5.900	0.079	1.580	2.090	33.40	36.60	60.35*				71.97*	1965	70485
		0.08			51.8	5.900	0.079	3.150	3.500	20.20	21.20	57.68*				64.37*	1966	84366
		0.08			51.8	5.900	0.079	0.390	0.670	49.10	49.40	38.77*				51.09*	1965	70485
		0.08			51.8	5.900	0.079	1.580	2.080	33.40	36.60	60.35*				71.73*	1966	84366
		0.08			53.0	5.900	0.079	1.180	1.650	37.20	40.70	56.82*				68.87*	1966	84366
		0.08			53.0	5.900	0.079	1.180	1.580	36.40	40.90	57.10*				67.44*	1966	84366
		0.08			53.0	5.900	0.079	0.790	1.140	---	45.00	50.69*				61.64*	1966	84366
		0.08			53.0	5.900	0.079	1.180	1.610	36.60	40.00	55.84*				66.70*	1966	84366
		0.08			53.0	5.900	0.079	0.790	---	---	45.00	50.69*				---	1966	84366
		0.08			53.0	5.900	0.079	3.150	3.620	---	21.80	59.31*				68.83*	1966	84366
		0.08			53.0	5.900	0.079	0.790	---	---	44.90	50.58*				---	1966	84366
		0.08			53.0	5.900	0.079	1.580	2.060	---	37.70	62.16*				73.18*	1966	84366
		0.08			53.0	5.900	0.079	3.150	3.680	---	21.10	57.41*				65.75*	1966	84366
		0.08			53.0	5.900	0.079	1.580	1.970	29.00	36.20	59.69*				68.45*	1966	84366
		0.08			53.0	5.900	0.079	1.580	2.120	30.70	35.20	58.04*				69.88*	1966	84366

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a ₀	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{max} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																			
T3	Sheet	0.09	R.T.	L-T	56.0	5.900	0.095	1.580	2.240	25.80	38.20	62.99*	---	---	78.78*	---	1966	84366	
		0.09			56.0	5.900	0.095	1.580	2.400	31.80	38.20	62.99*			82.78*		1966	84366	
		0.09			56.0	5.900	0.095	3.150	3.500	20.30	23.80	64.75*			72.26*		1966	84366	
		0.09			56.0	5.900	0.095	3.150	3.740	21.60	23.60	64.21*			77.56*		1966	84366	
		0.09			56.0	5.900	0.095	0.790	1.100	46.40	47.50	53.51*			63.81*		1966	84366	
		0.09			56.0	5.900	0.095	1.180	1.540	39.80	43.00	60.03*			69.84*		1966	84366	
		0.09			56.0	5.900	0.095	0.790	1.060	46.40	47.50	53.62*			62.67*		1966	84366	
		0.04			45.0	11.800	0.039	4.720	6.170	17.20	23.90	72.35*			90.15*		1966	70519	
		0.04			45.0	11.800	0.039	3.540	5.240	20.40	29.20	72.95*			95.69*		1966	70519	
		0.04			45.0	11.800	0.039	1.770	2.600	25.60	36.00	60.87*			75.01*		1966	70519	
T3	Sheet	0.04	R.T.	L-T	45.0	11.800	0.039	1.770	2.400	30.50	36.20	61.21*	---	---	72.14*	---	1966	70519	
		0.04			45.0	11.800	0.039	1.770	2.950	29.80	36.20	61.21*			81.07*		1966	70519	
		0.04			45.0	11.800	0.039	1.180	1.930	33.80	40.10	54.83*			71.00*		1966	70519	
		0.04			45.0	11.800	0.039	1.180	1.610	35.20	39.80	54.52*			64.03*		1966	70519	
		0.04			45.0	11.800	0.039	4.720	6.530	18.10	24.20	73.26*			96.48*		1966	70519	
		0.04			45.0	11.800	0.039	3.540	5.150	20.60	29.50	73.70*			95.37*		1966	70519	
		0.08			51.8	11.800	0.079	4.720	5.710	17.20	28.30	85.67*			99.56*		1965	70485	
		0.08			51.8	11.800	0.079	1.770	2.480	32.30	42.10	71.19*			85.43*		1965	70485	
		0.08			51.8	11.800	0.079	1.180	2.240	32.00	45.50	62.93*			87.30*		1965	70485	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _s	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																			
T3 Cont'd	Sheet Cont'd	0.08			51.8	11.800	0.079	1.770	2.280	28.50	42.10	71.19*	Cont'd	Cont'd	Cont'd	81.56*	Cont'd	1965	70485
		0.08			51.8	11.800	0.079	4.720	5.830	17.40	28.50	86.28*				102.09*			70485
		0.08			51.8	11.800	0.079	3.540	4.540	24.90	34.00	84.94*				100.09*			70485
		0.08			51.8	11.800	0.079	3.540	4.610	25.80	33.80	84.44*				100.59*			70485
		0.08			51.8	11.800	0.079	1.770	2.480	30.50	41.90	70.85*				85.03*			70485
		0.08			51.8	11.800	0.079	1.180	1.610	33.40	45.80	62.74*				73.68*			70485
		0.08			51.8	11.800	0.079	1.180	1.580	31.00	45.10	61.78*				71.85*			70485
		0.11			53.2	11.800	0.118	1.180	1.810	37.80	44.30	60.69*				75.80*			70519
		0.11			53.2	11.800	0.118	4.720	5.400	20.40	25.60	77.50*				85.96*			70519
		0.11			53.2	11.800	0.118	4.720	5.550	20.60	25.20	76.29				86.54*			70519
T3	Sheet	0.11			53.2	11.800	0.118	1.180	1.730	38.70	45.00	61.65*	---	---	---	75.18*	---	1966	70519
		0.11			53.2	11.800	0.118	3.540	4.560	25.20	32.20	80.44*				95.09*			70519
		0.11			53.2	11.800	0.118	3.540	4.690	23.30	32.20	80.44*				97.03*			70519
		0.11			53.2	11.800	0.118	1.770	2.520	34.00	41.50	70.17*				84.97*			70519
		0.11			53.2	11.800	0.118	1.770	2.720	31.90	41.60	70.34*				88.92*			70519
		0.11			53.2	11.800	0.118	1.770	2.480	35.70	41.90	70.85*				85.03*			70519
		0.16			52.0	11.800	0.158	1.180	1.610	36.10	44.30	60.69*				71.27*			70519
		0.16			52.0	11.800	0.158	3.540	4.610	26.30	32.50	81.19*				96.72*			70519
		0.16			52.0	11.800	0.158	4.720	6.060	19.80	26.90	81.43*				99.78*			70519
		0.16			52.0	11.800	0.158	4.720	6.060	19.80	26.90	81.43*				99.78*			70519

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi/in.) K _{app}	K _{app} MEAN	STAN DEV	K _C (Ksi/in.) K _C	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																			
T3 Cont'd	Sheet Cont'd	0.16	R.T. Cont'd	L-T Cont'd	52.0	11.800	0.158	1.180	1.610	38.40	44.40	60.82*	Cont'd	71.43*	Cont'd	Cont'd	1966	70519	
		0.16			52.0	11.800	0.158	1.770	2.440	33.80	41.50	70.34*		83.66*			1966	70519	
		0.16			52.0	11.800	0.158	1.770	2.990	34.80	41.10	69.50*		92.77*			1966	70519	
		0.16			52.0	11.800	0.158	3.540	4.210	23.30	32.20	80.44*		89.97*			1966	70519	
		0.16			52.0	11.800	0.158	4.720	5.640	20.90	26.50	80.22*		92.24*			1966	70519	
		0.16			52.0	11.800	0.158	1.770	2.520	34.00	41.30	69.84*		84.56*			1966	70519	
T3	Sheet	0.01	R.T.	L-T	51.8	15.000	0.009	7.500	8.890	---	21.20	86.53*	---	102.53*	---	1966	86734		
T3	Sheet	0.01	R.T.	L-T	51.8	15.000	0.010	7.500	8.840	---	21.40	87.35*		102.84*		1966	86734		
T3	Sheet	0.02	R.T.	L-T	42.3	15.000	0.019	7.500	9.900	---	21.90	89.39*	---	121.04*	---	1966	86734		
T3	Sheet	0.03	R.T.	L-T	53.0	15.000	0.030	7.500	9.330	---	22.80	93.06*		116.69*		1966	86734		
T3	Sheet	0.03	R.T.	L-T	53.0	15.000	0.030	7.500	9.500	---	22.30	91.02*	---	118.30*	---	---	1966	86734	
		0.08			51.8	23.600	0.079	1.970	3.190	32.60	45.10	79.68*		102.11*			1965	70485	
		0.08			51.8	23.600	0.079	11.80	12.520	12.70	20.20	103.42		109.24*			1965	70485	
		0.08			51.8	23.600	0.079	4.720	6.300	23.60	31.30	87.39		103.03*			1965	70485	
		0.08			51.8	23.600	0.079	0.790	---	---	49.80	55.51*		---			1965	70485	
		0.08			51.8	23.600	0.079	6.300	9.060	15.90	31.90	105.00*		132.50*			1965	70485	
		0.08			51.8	23.600	0.079	0.790	1.690	46.20	50.40	56.18*		82.38*			1965	70485	
		0.08			51.8	23.600	0.079	4.720	7.400	23.90	37.80	105.54*		137.29*			1965	70485	
		0.08			51.8	23.600	0.079	1.180	2.620	37.80	49.20	67.09*		100.58*			1965	70485	
		0.08			51.8	23.600	0.079	1.180	2.620	37.80	49.20	67.09*		100.58*			1965	70485	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																							
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER				
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in.)	K _{app} MEAN	STAN DEV	K _C (Ksi√in.)	K _C MEAN	STAN DEV						
BUCKLING OF CRACK EDGES RESTRAINED																							
T3 Cont'd	Sheet Cont'd	0.08	R.T. Cont'd	L-T Cont'd	51.8	23.600	0.079	3.150	4.450	25.60	35.40	79.62	Cont'd	Cont'd	95.70*	Cont'd	Cont'd	Cont'd	1965	70485			
		0.08			51.8	23.600	0.079	1.580	---	---	46.30	73.14*			---				1965	70485			
		0.08			51.8	23.600	0.079	1.580	2.520	40.70	48.60	76.78*			97.38*				1965	70485			
		0.08			51.8	23.600	0.079	4.720	5.750	22.20	29.80	83.20			92.99				1965	70485			
		0.08			51.8	23.600	0.079	6.300	9.450	18.00	30.90	101.71*			132.39*				1965	70485			
		0.08			51.8	23.600	0.079	8.660	11.720	13.20	25.20	101.50			128.24*				1965	70485			
		0.08			51.8	23.600	0.079	15.75	---	---	13.70	96.46			---				1965	70485			
		0.08			51.8	23.600	0.079	1.580	2.440	40.71	47.00	74.25*			92.62*				1965	70485			
		0.08			51.8	23.600	0.079	3.150	4.490	25.30	37.00	83.22*			100.51*				1965	70485			
		0.08			51.8	23.600	0.079	1.180	1.850	41.90	48.50	66.13*			82.99*				1965	70485			
		0.08			51.8	23.600	0.079	3.150	4.600	28.00	34.60	77.82			95.25*				1965	70485			
		0.08			51.8	23.600	0.079	1.180	2.090	41.70	50.00	68.18*			91.04*				1965	70485			
		0.08			51.8	23.600	0.079	0.790	1.420	28.90	52.40	58.41*			78.43*				1965	70485			
		T3			Sheet	0.06	R.T.	L-T	52.8	48.000	0.060	24.00			29.850				---	19.10	139.46	141.3	2.6	174.83*	---	---	1965	86734
						0.06			52.8	48.000	0.061	24.00	28.250	---	19.60	143.11	168.24*	1966	86734				
T3	Sheet	0.01	R.T.	T-L	46.0	14.990	0.009	7.500	9.510	---	20.80	84.92*	---	---	109.08*	---	---	1962	62308				
		0.01			46.0	14.990	0.010	7.500	9.060	---	21.20	86.56*			104.82*			1962	62308				
T3	Sheet	0.02	R.T.	T-L	46.5	15.000	0.020	7.500	8.680	---	20.40	83.27*	---	---	96.09*	---	---	1966	86734				
T3	Sheet	0.06	R.T.	T-L	44.9	48.000	0.061	24.00	28.650	---	17.10	124.86	---	---	149.12*	---	---	1966	86734				

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																					
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER		
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV				
BUCKLING OF CRACK EDGES RESTRAINED																					
T3	Sheet	0.08	R.T.	T-L	43.0	47.980	0.079	24.00	27.150	---	18.80	137.29*	---	---	154.64*	---	---	1966	86734		
		0.08			43.0	47.980	0.080	24.00	27.810	---	18.90	138.02*						---	169.50*	1966	86734
BUCKLING OF CRACK EDGES NOT RESTRAINED																					
T3	Sheet	0.06	60	L-T	47.0	12.000	0.061	3.000	---	---	31.60	71.37*	---	---	---	---	---	1966	86734		
		0.06			47.0	12.000	0.061	3.910	---	---	26.82	71.18*						---	---	1966	86734
		0.06			47.0	12.000	0.061	3.000	---	---	32.10	72.50*						---	---	1966	86734
		0.06			47.0	12.000	0.061	3.000	---	---	31.60	71.37*						---	---	1966	86734
T3	Sheet	0.06	R.T.	L-T	53.2	2.000	0.064	0.622	1.020	33.30	36.20	38.08*	---	---	54.93*	---	---	1973	86213		
		0.06			53.2	2.000	0.064	0.621	0.980	31.60	36.20	38.00*						---	53.00*	1973	86213
T3	Sheet	0.04	R.T.	L-T	44.3	7.500	0.040	3.000	---	---	21.30	51.41*	50.5	4.4	---	---	---	1966	86734		
		0.04			44.4	7.500	0.040	3.000	---	---	21.90	52.85*						---	---	1966	86734
		0.04			46.1	7.500	0.040	0.550	---	---	41.30	38.52*						---	---	1966	86734
		0.04			46.1	7.500	0.040	1.050	---	---	37.20	48.36*						---	---	1966	86734
		0.04			46.1	7.500	0.040	4.700	---	---	12.14	44.34						---	---	1966	86734
		0.04			46.1	7.500	0.040	4.700	---	---	12.14	44.34						---	---	1966	86734
		0.04			46.1	7.500	0.040	2.100	---	---	28.70	54.80*						---	---	1966	86734
		0.04			46.1	7.500	0.040	1.100	---	---	39.60	52.76*						---	---	1966	86734
		0.04			46.1	7.500	0.040	3.900	---	---	16.73	50.05						---	---	1966	86734
		0.04			46.1	7.500	0.040	1.050	---	---	37.10	48.23*						---	---	1966	86734

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																					
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER		
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _e	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV				
BUCKLING OF CRACK EDGES NOT RESTRAINED																					
T3 Cont'd	Sheet Cont'd	0.04	R.T. Cont'd	L-T Cont'd	46.1	7.500	0.040	0.500	---	---	42.10	37.41*	Cont'd			---	Cont'd			1966	86734
		0.04			46.1	7.500	0.040	0.550	---	---	41.60	38.79*				---				1966	86734
		0.04			46.1	7.500	0.040	2.000	---	---	29.90	55.45*				---				1966	86734
		0.04			46.1	7.500	0.040	4.150	---	---	15.27	48.53				---				1966	86734
		0.04			47.4	7.500	0.040	4.200	---	---	15.80	50.83	Cont'd			---	Cont'd			1966	86734
		0.04			47.4	7.500	0.040	4.700	---	---	13.00	47.48				---				1966	86734
		0.04			47.4	7.500	0.040	1.050	---	---	41.90	54.47*				---				1966	86734
		0.04			47.4	7.500	0.040	0.500	---	---	44.90	39.90*				---				1966	86734
		0.04			47.4	7.500	0.040	2.200	---	---	30.70	60.30*	Cont'd			---	Cont'd			1966	86734
		0.04			47.4	7.500	0.040	4.100	---	---	16.20	50.86				---				1966	86734
		0.04			47.4	7.500	0.040	0.950	---	---	42.40	52.31*				---				1966	86734
		0.04			47.4	7.500	0.040	2.000	---	---	32.90	61.01*				---				1966	86734
		0.04			47.4	7.500	0.040	4.000	---	---	17.33	53.10	Cont'd			---	Cont'd			1966	86734
		0.04			47.4	7.500	0.040	0.500	---	---	45.40	40.35*				---				1966	86734
		0.04			47.4	7.500	0.040	0.750	---	---	43.40	47.40*				---				1966	86734
		0.04			51.0	7.500	0.040	4.120	---	---	17.00	53.63				---				1966	86734
		0.04			51.0	7.500	0.040	1.150	---	---	44.10	60.15*	Cont'd			---	Cont'd			1966	86734
		0.04			51.0	7.500	0.040	5.900	---	---	12.14	64.45*				---				1966	86734
		0.04			51.0	7.500	0.040	1.150	---	---	43.90	59.87*				---				1966	86734
		0.04			51.0	7.500	0.040	1.150	---	---	43.90	59.87*				---				1966	86734

* NOTE: NET SECTION STRESS EXCEEDS 90% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS			K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi/in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T3 Cont'd	Sheet Cont'd	0.04	R.T. Cont'd	L-T Cont'd	51.0	7.500	0.040	0.810	---	---	48.70	55.33*	Cont'd	Cont'd	Cont'd	---	Cont'd	1966	86734	
		0.04			51.0	7.500	0.040	1.950	---	---	31.40	57.36*				---		1966	86734	
		0.04			51.0	7.500	0.040	0.500	---	---	51.30	45.59*				---		1966	86734	
		0.04			51.0	7.500	0.040	4.870	---	---	12.14	46.41				---		1966	86734	
		0.04			51.0	7.500	0.040	0.500	---	---	51.70	45.94*				---		1966	86734	
		0.04			51.0	7.500	0.040	4.280	---	---	14.80	48.56				---		1966	86734	
		0.04			51.0	7.500	0.040	0.650	---	---	50.70	51.47*				---		1966	86734	
		0.04			51.2	7.500	0.040	3.000	---	---	22.00	53.10				---		1966	86734	
		0.04			51.5	7.500	0.040	3.000	---	---	24.70	59.61				---		1966	86734	
		0.04			51.5	7.500	0.040	3.000	---	---	23.30	56.23				---		1966	86734	
		0.06			44.2	7.500	0.064	0.500	---	---	45.20	40.17*				---		1966	86734	
		0.06			44.2	7.500	0.064	1.080	---	---	41.80	55.15*				---		1966	86734	
		0.06			44.2	7.500	0.064	1.940	---	---	34.30	62.47*				---		1966	86734	
		0.06			44.2	7.500	0.064	0.500	---	---	44.80	39.81*				---		1966	86734	
		0.06			44.2	7.500	0.064	3.910	---	---	18.83	56.47*				---		1966	86734	
		0.06			44.2	7.500	0.064	4.900	---	---	12.13	46.76				---		1966	86734	
		0.06			44.2	7.500	0.064	5.450	---	---	12.13	55.01*				---		1966	86734	
		0.06			44.2	7.500	0.064	1.930	---	---	34.10	61.92*				---		1966	86734	
		0.06			44.2	7.500	0.064	0.500	---	---	46.10	40.97*				---		1966	86734	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

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ALUMINUM 2024 (ALCLAD) K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T3 Cont'd	Sheet Cont'd	0.06	R.T. Cont'd	L-T Cont'd	44.2	7.500	0.064	0.500	---	---	46.00	40.88*	Cont'd	Cont'd	---	Cont'd	Cont'd	---	86734
		0.06			44.2	7.500	0.064	3.760	---	---	19.75	57.14*			---			86734	
		0.06			44.2	7.500	0.064	0.960	---	---	45.80	56.82*			---			86734	
T3	Sheet	0.03	R.T.	L-T	51.0	9.000	0.032	2.560	2.800	---	31.90	67.36*	53.2	9.4	---	---	---	71.20*	62311
		0.04			51.0	9.000	0.040	4.480	4.980	18.20	20.70	65.19*			72.06*			62311	
		0.04			51.0	9.000	0.040	2.490	2.800	28.30	31.90	66.24*			71.20*			62311	
		0.04			51.0	9.000	0.040	4.420	4.880	18.10	20.50	63.80			69.93*			62311	
		0.04			51.0	9.000	0.040	6.280	6.500	9.60	9.90	45.99			48.66			62311	
		0.04			51.0	9.000	0.040	6.220	6.620	9.20	10.90	49.89			55.33*			62311	
T3	Sheet	0.09	R.T.	L-T	51.0	9.000	0.091	4.480	5.060	20.10	23.10	72.75*	---	---	81.74*	---	---	62311	
		0.09			51.0	9.000	0.091	2.560	2.920	28.10	35.70	75.38*			81.83*			62311	
		0.09			51.0	9.000	0.091	6.230	6.520	10.90	14.00	64.24*			69.18*			62311	
		0.09			51.0	9.000	0.091	6.190	6.650	11.00	13.60	61.79*			69.61*			62311	
		0.09			51.0	9.000	0.091	4.480	4.860	20.10	23.20	73.06*			78.82*			62311	
		0.09			51.0	9.000	0.091	2.500	3.040	28.10	34.90	72.65*			82.12*			62311	
T3	Sheet	0.10	R.T.	L-T	51.0	9.000	0.102	2.100	2.340	32.10	36.10	67.86*	---	---	72.26*	---	---	62311	
		0.10			51.0	9.000	0.102	---	1.700	---	39.20	---			65.50*			62311	
T3	Sheet	0.06	R.T.	L-T	52.7	15.820	0.062	4.000	---	---	30.90	80.66	78.9	2.6	---	---	---	86213	
		0.06			52.7	15.820	0.063	1.020	1.500	---	47.10	59.77*			72.70*			86213	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T3 Cont'd	Sheet Cont'd	0.06	R.T.	L-T Cont'd	52.7	15.810	0.064	6.010	7.310	---	22.80	77.04	Cont'd	89.35*	Cont'd	Cont'd	86213	86213	
		0.06	Cont'd		52.7	15.810	0.065	3.000	4.370	---	36.10	80.15*		99.30*			86213		
T3	Sheet	0.04	R.T.	L-T	51.0	20.000	0.040	2.260	4.900	27.50	40.10	76.15*	---	115.56*	---	---	62311	62311	
		0.04	---		51.0	20.000	0.040	2.260	7.370	27.00	40.10	76.15*		149.12*			1965		
T3	Sheet	0.04	R.T.	L-T	50.6	30.000	0.040	15.00	19.700	---	17.70	102.17	90.4	137.40*	---	---	86734	86734	
		0.04			50.6	30.000	0.040	15.00	17.700	---	18.30	105.64		124.53*			86734		
		0.04			50.9	30.000	0.040	6.000	---	---	27.80	87.51		---			86734		
		0.04			51.3	30.000	0.040	12.00	---	---	17.50	84.47		---			86734		
		0.04			51.6	30.000	0.040	12.00	---	---	17.41	84.04		---			86734		
		0.04			52.1	30.000	0.040	3.000	---	---	36.10	78.85		---			86734		
T3	Sheet	0.10	R.T.	L-T	52.7	35.000	0.102	4.950	---	---	37.40	105.59*	103.5	---	---	---	84367	84367	
		0.10			52.7	35.000	0.102	17.90	---	---	19.10	121.55		---			84367		
		0.10			52.7	35.000	0.102	17.85	---	---	13.60	86.33		---			84367		
		0.10			52.7	35.000	0.102	1.480	---	---	48.10	73.42*		---			84367		
		0.10			52.7	35.000	0.102	1.070	---	---	49.60	64.34*		---			84367		
		0.10			52.7	35.000	0.102	10.70	---	---	23.60	102.74		---			84367		
T3	Sheet	0.08	R.T.	L-T	49.4	47.990	0.079	24.00	27.300	---	19.60	143.12	143.1	162.14*	---	86734	86734		
		0.08	49.4		47.990	0.080	24.00	27.450	---	19.60	143.12	163.09*		86734					

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in) K _{app}	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T3	Sheet	0.09	82	L-T	52.5	3.000	0.090	1.270	2.182	---	29.70	47.29*	---	85.32*	---	---	1973	86213	
		52.5			3.000	0.090	1.320	2.240	---	28.60	46.92*	86.18*		1973			86213		
		52.0			3.000	0.091	1.200	2.067	---	30.50	46.56*	80.16*		1973			86213		
		52.0			3.000	0.091	1.280	2.135	---	29.60	47.41*	81.88*		1973			86213		
		52.5			3.000	0.091	1.140	2.067	---	32.30	47.53*	84.89*		1973			86213		
		51.2			3.000	0.092	1.230	2.229	---	30.10	46.79*	89.79*		1973			86213		
		51.2			3.000	0.092	1.240	2.103	---	30.00	46.91*	80.99*		1973			86213		
		51.2			3.000	0.092	1.180	2.149	---	31.00	46.75*	86.69*		1973			86213		
		52.0			3.000	0.092	1.270	2.164	---	29.30	46.65*	82.97*		1973			86213		
		0.06			2.000	0.064	0.622	1.100	32.00	33.50	35.24*	54.64*		1973			86213		
T3	Sheet	0.06	R.T.	T-L	46.2	2.000	0.064	0.623	1.120	32.30	33.50	35.24*	---	55.65*	---	1973	86213		
		0.06			6.000	0.060	2.000	2.200	---	29.30	55.81*	---	59.48*	---	1966	86734			
T3	Sheet	0.04	R.T.	T-L	59.5	7.500	0.040	0.500	---	---	46.00	40.88*	48.9	---	---	6.1	1966	86734	
		59.5			7.500	0.040	1.300	---	---	36.80	53.58	---		1966			86734		
		59.5			7.500	0.040	4.060	---	---	15.07	46.85	---		1966			86734		
		59.5			7.500	0.040	2.000	---	---	30.10	55.82	---		1966			86734		
		59.5			7.500	0.040	0.760	---	---	44.70	48.82*	---		1966			86734		
		59.5			7.500	0.040	0.550	---	---	45.00	41.97*	---		1966			86734		
		59.5			7.500	0.040	4.200	---	---	12.14	39.06	---		1966			86734		
		0.04			7.500	0.040	4.200	---	---	12.14	39.06	---		1966			86734		

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

ALUMINUM 2024 (ALCLAD) K _C																		
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C		DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi/in)	K _C MEAN			STAN DEV
BUCKLING OF CRACK EDGES NOT RESTRAINED																		
T3 Cont'd	Sheet Cont'd	0.04	R.T. Cont'd	T-L Cont'd	59.5	7.500	0.040	2.060	---	---	29.30	55.30	Cont'd	Cont'd	---	Cont'd	1966	86734
		0.04			59.5	7.500	0.040	0.500	---	---	46.70	40.61*			---		1966	86734
		0.04			59.5	7.500	0.040	4.710	---	---	11.53	42.22			---		1966	86734
		0.04			59.5	7.500	0.040	4.000	---	---	15.76	48.29			---		1966	86734
		0.04			59.5	7.500	0.040	0.970	---	---	40.10	50.02			---		1966	86734
		0.06	R.T.	T-L	50.7	7.500	0.064	2.000	---	---	30.50	56.56*	Cont'd	Cont'd	---	Cont'd	1966	86734
		0.06			50.7	7.500	0.064	0.500	---	---	41.50	36.88*			---		1966	86734
		0.06			50.7	7.500	0.064	4.160	---	---	15.92	50.72			---		1966	86734
		0.06			50.7	7.500	0.064	0.660	---	---	40.00	40.92*			---		1966	86734
		0.06			50.7	7.500	0.064	4.090	---	---	16.15	50.58			---		1966	86734
T3	Sheet	0.06	R.T.	T-L	50.7	7.500	0.064	0.500	---	---	42.00	37.32*	48.1	6.0	---	Cont'd	1966	86734
		0.06			50.7	7.500	0.064	4.400	---	---	14.63	49.46			---		1966	86734
		0.06			50.7	7.500	0.064	4.500	---	---	12.14	42.10			---		1966	86734
		0.06			50.7	7.500	0.064	0.500	---	---	42.00	37.32*			---		1966	86734
		0.06			50.7	7.500	0.064	1.000	---	---	37.60	47.65*			---		1966	86734
		0.06	R.T.	T-L	50.7	7.500	0.064	1.950	---	---	30.30	55.36*	48.1	6.0	---	Cont'd	1966	86734
		0.06			50.7	7.500	0.064	0.750	---	---	42.30	46.20			---		1966	86734
		0.06			50.7	7.500	0.064	0.500	---	---	42.90	38.12			---		1966	86734
		0.06			50.7	7.500	0.064	2.170	---	---	30.00	58.43			---		1966	86734
		0.06			50.7	7.500	0.064	0.500	---	---	42.90	38.12			---		1966	86734

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONTINUED)

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ALUMINUM 2024 (ALCLAD) K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T3 Cont'd	Sheet Cont'd	0.06			62.6	7.500~	0.064	0.500	---	---	44.40	39.46	Cont'd	Cont'd	---	Cont'd	---	1966	86734
		0.06			62.6	7.500	0.064	2.300	---	---	27.10	54.72			---		---	1966	86734
		0.06		R.T.	62.6	7.500	0.064	1.000	---	---	40.30	51.07			---		---	1966	86734
		0.06			62.6	7.500	0.064	0.750	---	---	41.70	45.54			---		---	1966	86734
		0.06			62.6	7.500	0.064	1.110	---	---	37.50	50.20			---		---	1966	86734
T3	Sheet	0.06		R.T.	43.4	9.000	0.060	3.000	3.600	---	28.60	66.71*	---	---	75.61*	---	1966	86734	
T3	Sheet	0.02		R.T.	46.5	15.000	0.020	7.500	9.350	---	19.80	80.82*	---	---	101.60*	---	1966	86734	
T3	Sheet	0.03			44.4	15.010	0.031	7.500	9.560	---	20.40	83.25*	---	---	107.59*	---	---	1962	62308
		0.03		R.T.	44.4	15.010	0.031	7.500	9.380	---	20.40	83.25*			105.05*			1962	62308
T3	Sheet	0.06			43.4	15.000	0.060	5.000	5.900	---	23.70	71.37*	---	---	79.91*	---	---	1966	86734
		0.06		R.T.	43.4	15.000	0.060	5.000	5.800	---	24.00	72.28*			79.94*			1966	86734
T3	Sheet	0.06			46.6	15.810	0.064	4.000	---	---	28.40	74.14*	---	---	---	---	---	1973	86213
		0.06			46.6	15.810	0.064	3.000	---	---	32.10	71.27*			---			1973	86213
		0.06		R.T.	46.6	15.820	0.064	1.010	1.920	---	46.40	58.59*			81.32*			1973	86213
		0.06			46.6	15.810	0.065	6.010	7.140	---	21.20	71.63			81.51*			1973	86213
		0.06			43.4	18.000	0.060	6.000	7.000	---	22.10	72.91			80.97*			1966	86734
T3	Sheet	0.06		R.T.	43.4	18.000	0.061	6.000	6.900	---	22.30	73.57	73.2	0.5	80.97*	---	---	1966	86734
0.06			43.4	21.000	0.060	7.000	8.400	---	20.70	73.76	83.60	1966			86734				
T3	Sheet	0.06		R.T.	43.4	21.000	0.060	7.000	8.600	---	21.05	75.01	74.4	0.9	86.49*	---	---	1966	86734
0.06			43.4	21.000	0.060	7.000	8.600	---	21.05	75.01	86.49*	---			---			---	---

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.6.2.2 (CONCLUDED)

ALUMINUM 2024 (ALCLAD) K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi/in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T3	Sheet	0.06	R.T.	T-L	43.4	24.000	0.060	8.000	9.500	---	20.80	79.23	89.12	---	---	---	---	1966	86734
		0.06			43.4	24.000	0.061	8.000	9.600	---	21.60	82.28	93.25*	---	---	---	---	1966	86734
		0.04			43.3	30.020	0.040	15.00	16.200	---	19.10	110.23*	---	---	---	---	---	1962	62308
T3	Sheet	0.04	R.T.	T-L	43.3	29.990	0.041	15.00	18.620	---	17.20	99.30	124.20*	---	---	---	1962	62308	
		0.06			44.9	47.000	0.061	24.00	25.050	---	18.10	133.29*	---	---	---	---	---	1966	86734
T3	Sheet	0.09	82	T-L	44.3	3.000	0.091	1.220	2.442	---	28.00	43.26*	102.18*	---	---	---	1973	86213	
		0.09			45.2	3.000	0.091	1.300	2.653	---	26.30	42.63*	126.10*	---	---	---	1973	86213	
		0.09			44.3	3.000	0.092	1.230	2.473	---	27.60	42.90*	104.10*	---	---	---	1973	86213	
		0.09			44.3	3.000	0.092	1.220	2.514	---	28.00	43.26*	110.90*	---	---	---	1973	86213	
		0.09			45.2	3.000	0.092	1.200	2.480	---	27.10	41.37*	103.14*	---	---	---	1973	86213	
		0.09			45.2	3.000	0.092	1.200	2.504	---	27.70	42.28*	108.41*	---	---	---	1973	86213	
T3	Sheet	0.09	82	T-L	45.4	3.000	0.092	1.250	2.539	---	26.90	42.32*	109.74*	---	---	---	1973	86213	
		0.09			45.4	3.000	0.092	1.230	2.525	---	27.10	42.12*	108.65*	---	---	---	1973	86213	
		0.09			45.4	3.000	0.092	1.220	2.381	---	27.80	42.95*	95.18*	---	---	---	1973	86213	
		0.09			45.4	3.000	0.092	1.220	2.381	---	27.80	42.95*	95.18*	---	---	---	1973	86213	
T86	Sheet	0.06	R.T.	L-T	65.8	2.000	0.063	0.625	1.030	---	34.70	36.57	53.13*	---	---	1973	86213		
		0.06			65.8	2.000	0.063	0.625	0.940	---	32.90	34.68	46.48*	---	---	---	1973	86213	
T86	Sheet	0.06	R.T.	T-L	65.1	2.000	0.063	0.625	0.970	---	30.90	32.57	44.84*	---	---	---	1973	86213	
		0.06			65.1	2.000	0.063	0.625	0.860	---	30.30	31.94	39.86*	---	---	---	1973	86213	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

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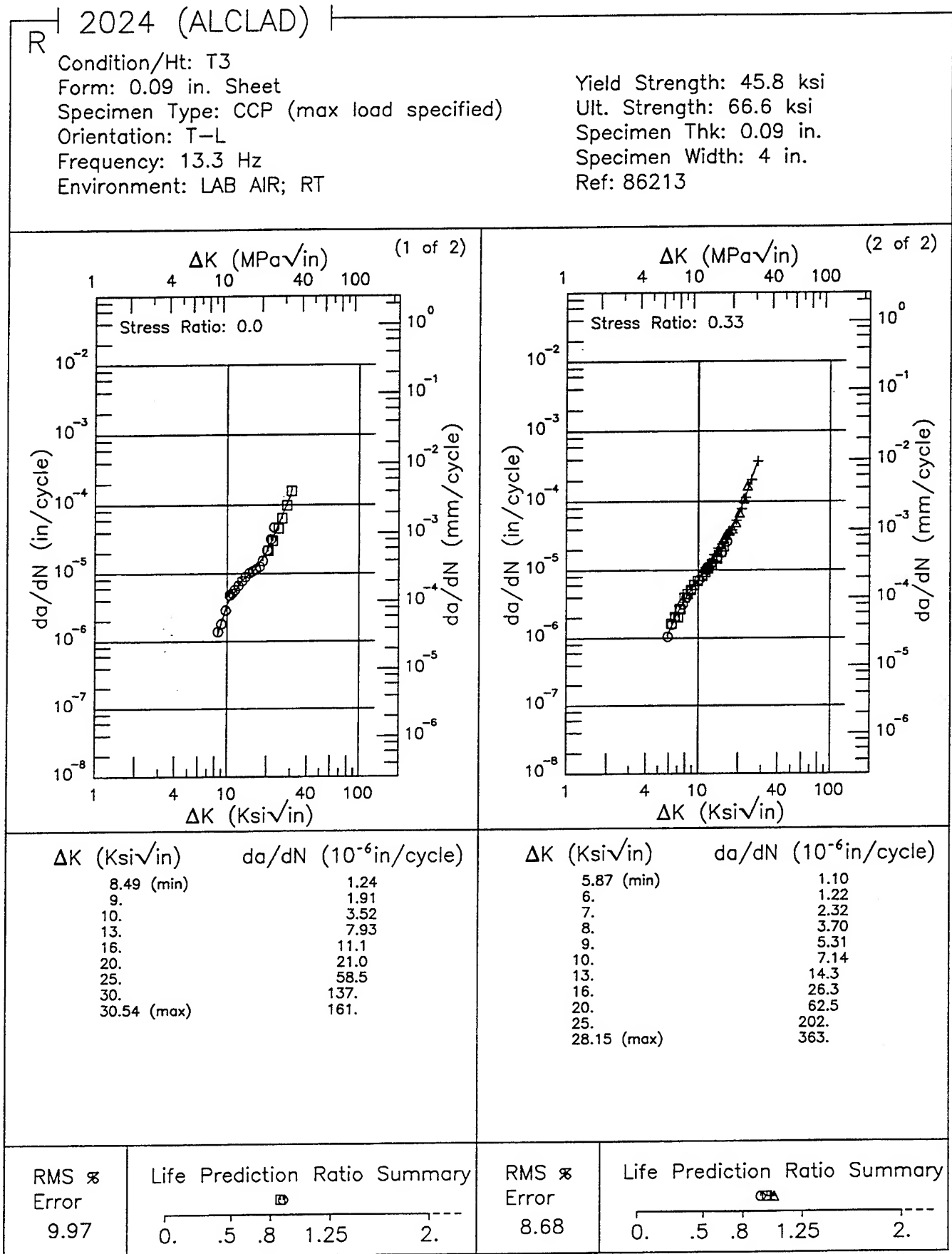


Figure 7.6.3.1

TABLE 7.7.1.1

1 of 1

**MEAN PLANE STRAIN FRACTURE TOUGHNESS
FOR ALUMINUM 2000/6000 SERIES ALLOY 2048 AT ROOM TEMPERATURE**

Product Form	Condition/Heat Treatment	K_{Ic} (ksi \sqrt{in})							
		Specimen Orientation							
		L-T		T-L		S-L			
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev
Plate	T851	37.9	1.9	22	30.6	2.5	24	25.4	1.9
									18

TABLE 7.7.1.2.1

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2048 AT ROOM TEMPERATURE

ORIENTATION: L-T		ENVIRONMENT: Dry Air						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level (Ksi \sqrt{in})				
				2.5	5.0	10.0	20.0	50.0
T851	PLATE	0.33	2-20			3.28		100.0
		0.33	2-20			4.94	55.31	

TABLE 7.7.1.2.2

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2048 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level (KSI/in)				
				2.5	5.0	10.0	20.0	50.0
T851	PLATE	0.33	2-20			9.45		100.0
		0.33	2-20			8.85		

TABLE 7.7.1.2.3

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2048 ALLOYS AT ROOM TEMPERATURE

ORIENTATION: T-L				ENVIRONMENT: Dry Air						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
				ΔK Level (Ksi \sqrt{in})						
				2.5	5.0	10.0	20.0	50.0	100.0	
T851	PLATE	0.33	2-20			6.46				
		0.33	10-30			3.71				

TABLE 7.7.1.2.4

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2048 AT ROOM TEMPERATURE**

ORIENTATION: T-L

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (KSI \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.33	2-20			9.24			

TABLE 7.7.1.2.5

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2048 AT ROOM TEMPERATURE**

ORIENTATION: T-L

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.33	2-20		1.05	10.88			
		0.33	2-20		0.5	11.23			
		0.33	30	0.08	0.78				
		0.67	30		1.52	24.61			

TABLE 7.7.1.2.6

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2048 AT ROOM TEMPERATURE

ORIENTATION: S-L

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level ($K\sqrt{\text{in}}$)				
				2.6	6.0	10.0	20.0	50.0
T861	PLATE	0.33	2-20			11.48		
								100.0

TABLE 7.7.1.2.7

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2048 AT ROOM TEMPERATURE

ORIENTATION: S-L

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.33	2-20	1.48	13.32				

TABLE 7.7.2.1

ALUMINUM 2048 K _{Ic}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{Ic} TYS) ² (in.)	K _{Ic}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{Ic} (Ksi√in.)	K _{Ic} MEAN	STAN DEV		
T851	Plate	4.00	R.T.	L-T	59.1	4.000	2.000	CT	2.040	1.06	38.40	37.9	1.9	1977	AL001
		4.00			59.1	4.000	2.000	CT	2.020	1.00	37.40			1977	AL001
		4.00			59.1	4.000	2.000	CT	2.000	1.07	38.60			1977	AL001
		1.00			62.1	2.000	1.000	CT	1.030	0.97	38.70			1977	AL001
		2.00			63.7	4.000	1.980	CT	2.070	0.97	39.60			1977	AL001
		2.00			63.7	4.000	1.980	CT	2.060	1.06	41.20			1977	AL001
		2.00			63.7	4.000	1.980	CT	2.060	1.11	42.40			1977	AL001
		3.00			64.2	6.000	3.000	CT	3.120	0.80	36.40			1977	AL001
		3.00			64.2	6.000	3.000	CT	3.140	0.84	37.20			1977	AL001
		4.00			64.2	4.000	2.000	CT	2.020	0.79	36.20			1977	AL001
		3.00			64.2	6.000	3.000	CT	3.120	0.83	37.00			1977	AL001
		4.00			64.2	4.000	2.000	CT	2.010	0.75	35.20			1977	AL001
		4.00			64.2	4.000	2.000	CT	2.020	0.80	36.40			1977	AL001
		3.00			64.7	6.000	3.000	CT	3.060	0.89	39.50			1977	AL001
		3.00			64.7	6.000	3.000	CT	3.070	0.90	38.80			1977	AL001
		3.00			64.7	6.000	3.000	CT	3.080	0.84	37.60			1977	AL001
		2.00			65.4	4.000	1.980	CT	2.040	0.90	39.30			1977	AL001
		2.00			65.4	4.000	1.980	CT	2.040	0.91	39.40			1977	AL001
		2.00			65.4	4.000	1.980	CT	2.060	0.88	38.90			1977	AL001
		1.00			67.5	2.000	1.000	CT	1.040	0.70	35.70			1977	AL001
		1.00			67.5	2.000	1.000	CT	1.020	0.68	35.20			1977	AL001
		1.00			67.5	2.000	1.000	CT	1.040	0.70	35.70			1977	AL001

TABLE 7.7.2.1 (CONTINUED)

ALUMINUM 2048 K_{Ic}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	$2.5 \cdot (K_{Ic}/\sqrt{B})^2$ (in.)	K_{Ic}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K_{Ic} (Ksi√in.)	K_{Ic} MEAN	STAN DEV		
T851	Plate	4.00	R.T.	T-L	57.3	4.000	2.000	CT	2.060	0.61	28.30	30.6	2.5	1977	AL001
		4.00			57.3	4.000	2.000	CT	2.020	0.61	28.40			1977	AL001
		4.00			57.3	4.000	2.000	CT	2.030	0.60	28.00			1977	AL001
		1.00			61.1	2.000	1.000	CT	1.030	0.67	31.70			1977	AL001
		1.00			61.1	2.000	1.000	CT	1.040	0.68	31.80			1977	AL001
		1.00			61.1	2.000	1.000	CT	1.030	0.67	31.70			1977	AL001
		4.00			61.9	4.000	2.000	CT	2.060	0.46	26.60			1977	AL001
		4.00			61.9	4.000	2.000	CT	2.040	0.48	27.00			1977	AL001
		4.00			61.9	4.000	2.000	CT	2.030	0.45	26.20			1977	AL001
		2.00			62.6	4.000	1.980	CT	2.060	0.57	30.00			1977	AL001
		2.00			62.6	4.000	1.980	CT	2.090	0.56	29.70			1977	AL001
		2.00			62.6	4.000	1.980	CT	2.060	0.55	29.40			1977	AL001
		3.00			62.9	6.000	3.000	CT	3.140	0.73	33.80			1977	AL001
		3.00			62.9	6.000	3.000	CT	3.100	0.70	33.30			1977	AL001
		3.00			62.9	6.000	3.000	CT	3.070	0.71	33.60			1977	AL001
		3.00			63.9	6.000	3.000	CT	3.240	0.70	33.70			1977	AL001
		3.00			63.9	6.000	3.000	CT	3.240	0.73	34.50			1977	AL001
		3.00			63.9	6.000	3.000	CT	3.280	0.72	34.30			1977	AL001
		2.00			64.9	4.000	1.980	CT	2.070	0.55	30.40			1977	AL001
		2.00			64.9	4.000	1.980	CT	2.060	0.53	29.90			1977	AL001
		2.00			64.9	4.000	1.980	CT	2.090	0.52	29.50			1977	AL001
		1.00			65.4	2.000	1.000	CT	1.060	0.56	30.90			1977	AL001
		1.00			65.4	2.000	1.000	CT	1.060	0.56	31.00			1977	AL001
		1.00			65.4	2.000	1.000	CT	1.060	0.55	30.70			1977	AL001

TABLE 7.7.2.1 (CONCLUDED)

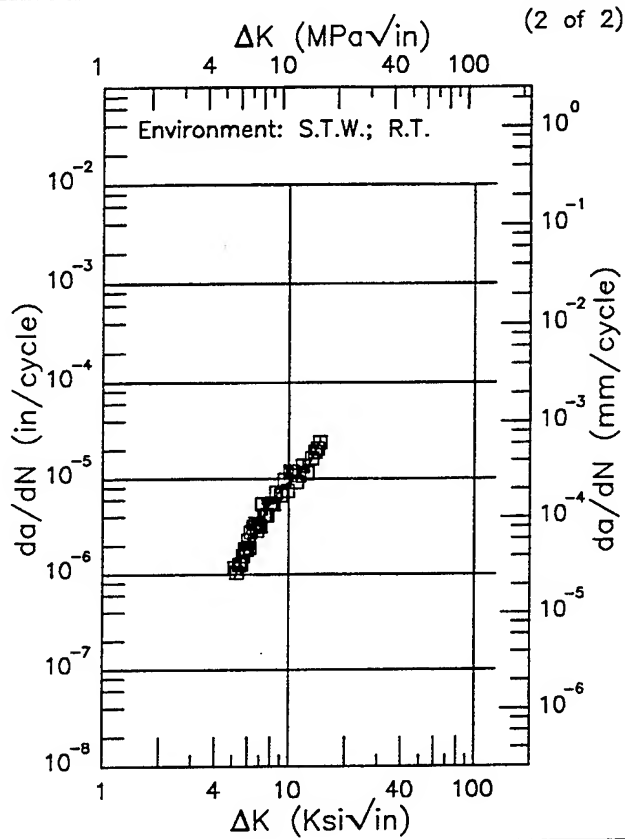
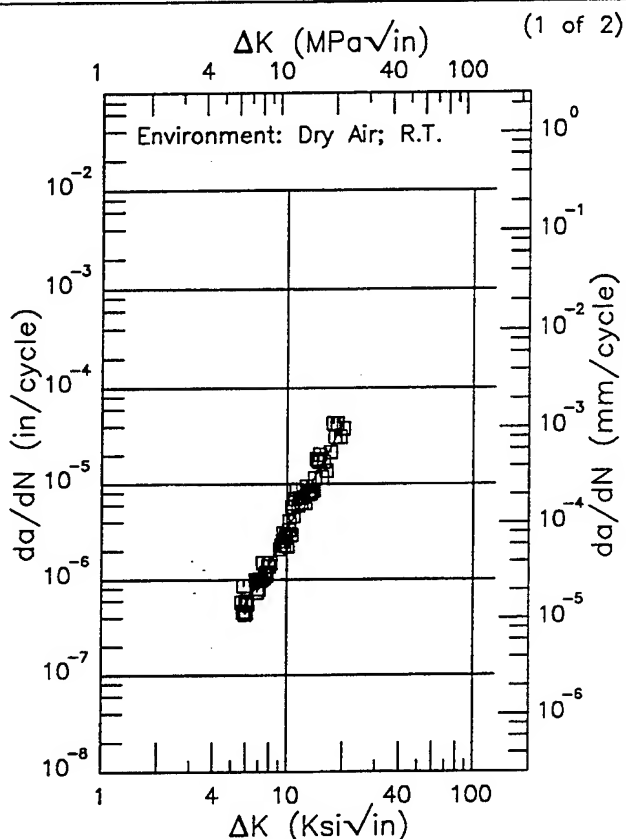
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2048

ALUMINUM 2048 K_{Ic}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	$2.5 \cdot (K_{Ic}/TYS)^2$ (in.)	K_{Ic}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K_{Ic} (Ksi√in.)	K_{Ic} MEAN	STAN DEV		
T851	Plate	4.00	R.T.	S-L	56.0	3.000	1.500	CT	1.530	0.48	24.60	25.4	1.9	1977	AL001
		4.00			56.0	3.000	1.500	CT	1.530	0.55	26.20			1977	AL001
		4.00			56.0	3.000	1.500	CT	1.530	0.52	25.60			1977	AL001
		3.00			58.5	2.500	1.250	CT	1.280	0.38	22.80			1977	AL001
		3.00			58.5	2.500	1.250	CT	1.280	0.38	22.80			1977	AL001
		3.00			58.5	2.500	1.250	CT	1.280	0.41	23.70			1977	AL001
		3.00			58.9	2.500	1.250	CT	1.290	0.60	28.80			1977	AL001
		3.00			58.9	2.500	1.250	CT	1.300	0.52	26.80			1977	AL001
		3.00			58.9	2.500	1.250	CT	1.290	0.65	30.00			1977	AL001
		2.00			59.3	1.500	0.750	CT	0.770	0.43	24.70			1977	AL001
		2.00			59.3	1.500	0.750	CT	0.780	0.46	25.30			1977	AL001
		2.00			59.3	1.500	0.750	CT	0.770	0.43	24.70			1977	AL001
		4.00			59.5	3.000	1.500	CT	1.520	0.42	24.30			1977	AL001
		4.00			59.5	3.000	1.500	CT	1.520	0.42	24.50			1977	AL001
		4.00			59.5	3.000	1.500	CT	1.520	0.40	23.90			1977	AL001
		2.00			59.9	1.500	0.750	CT	0.780	0.47	26.00			1977	AL001
		2.00			59.9	1.500	0.750	CT	0.780	0.48	26.20			1977	AL001
		2.00			59.9	1.500	0.750	CT	0.780	0.48	26.20			1977	AL001

E | 2048 |
 Condition/Ht: T851
 Form: 1 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.33
 Frequency: 2 - 20 Hz

Yield Strength: 67.5 ksi
 Ult. Strength: 71.4 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.805 in.
 Ref: AL001



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.67 (min)	0.499
6.	0.573
7.	0.896
8.	1.41
9.	2.19
10.	3.28
13.	8.87
16.	18.5
19.95 (max)	42.9

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.12 (min)	0.929
6.	2.06
7.	3.55
8.	5.39
9.	7.58
10.	9.45
13.	14.5
14.65 (max)	24.4

RMS %
 Error
 22.63

Life Prediction Ratio Summary
 0. .5 .8 1.25 2. ---

RMS %
 Error
 12.69

Life Prediction Ratio Summary
 0. .5 .8 1.25 2. ---

Figure 7.7.3.1.1

Condition/Ht: T851
 Form: 4 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.33
 Frequency: 2 - 20 Hz

Yield Strength: 59.1 ksi
 Ult. Strength: 64.4 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.1 in.
 Ref: AL001

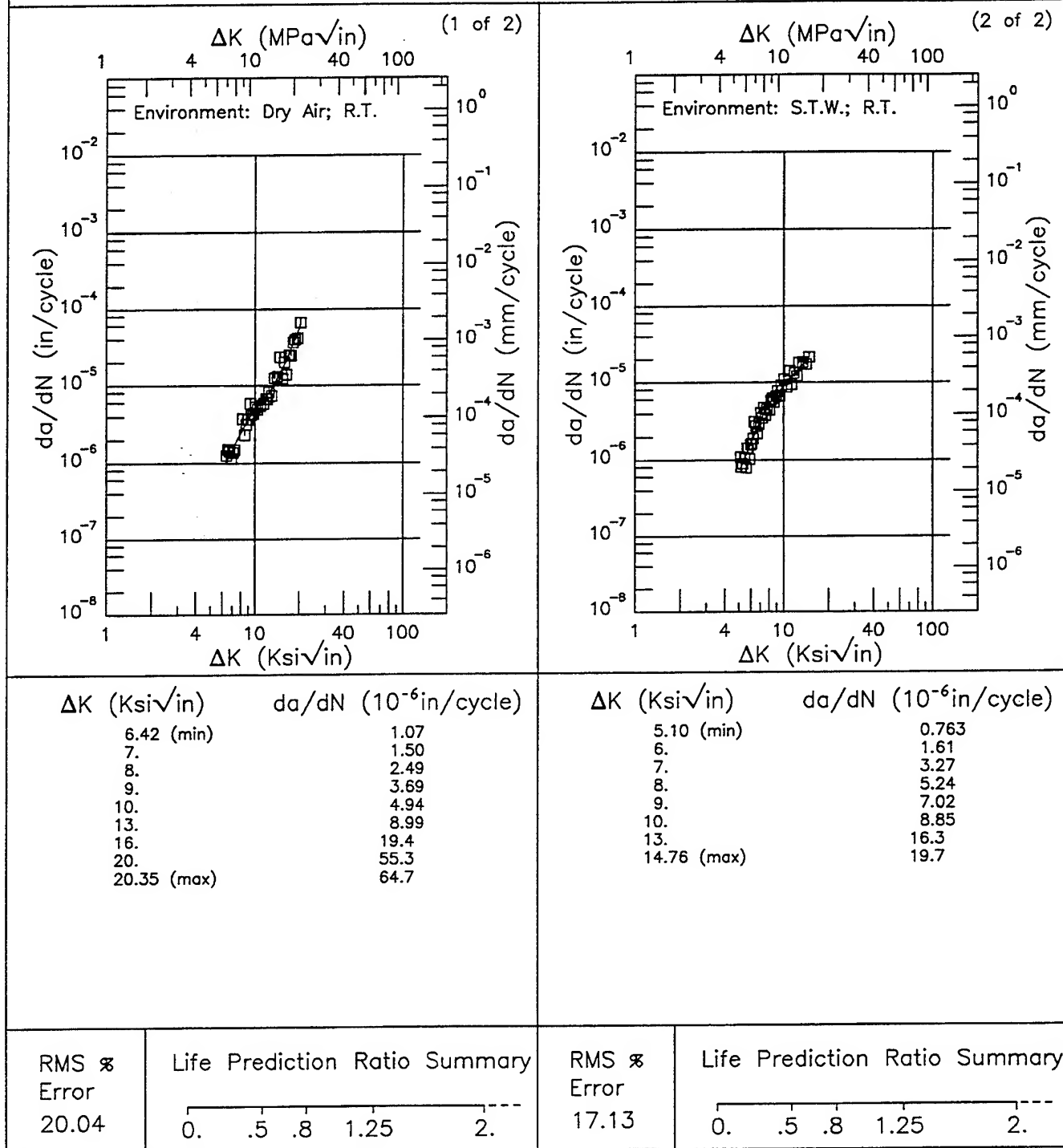
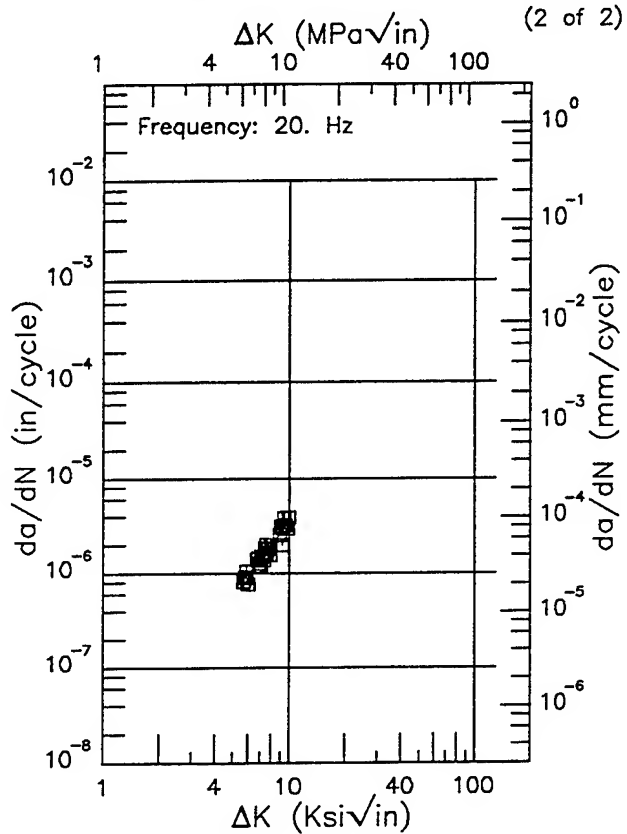
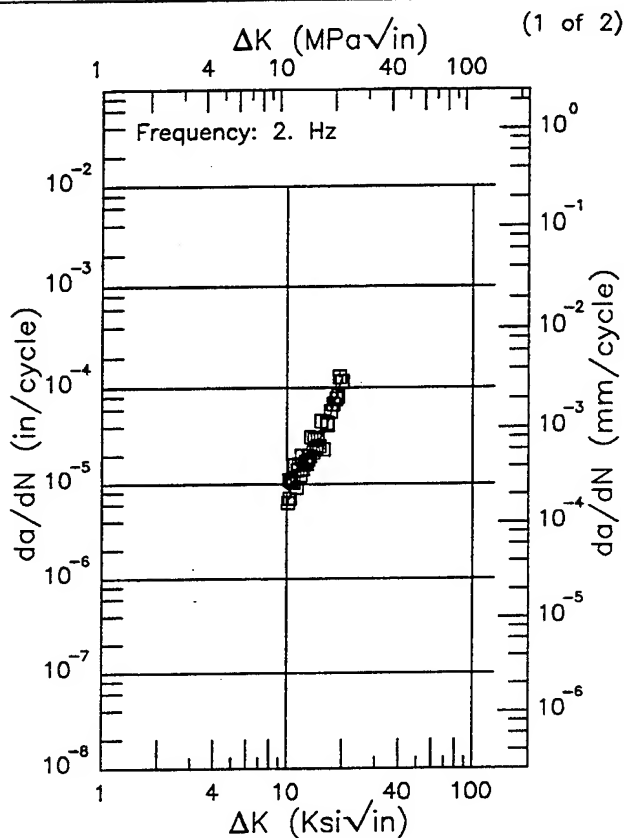


Figure 7.7.3.1.2

F | 2048 |
 Condition/Ht: T851
 Form: 1 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.33
 Environment: DRY AIR; RT

Yield Strength: 65.4 ksi
 Ult. Strength: 70.5 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.805 in.
 Ref: AL001



ΔK (Ksi√in)	da/dN (10 ⁻⁶ in/cycle)
10.08 (min)	8.19
13.	20.1
16.	35.3
19.81 (max)	123.

ΔK (Ksi√in)	da/dN (10 ⁻⁶ in/cycle)
5.67 (min)	0.737
6.	0.872
7.	1.39
8.	1.99
9.	2.63
9.90 (max)	3.62

RMS %
 Error
 19.70

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error
 12.73

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.7.3.1.3

Condition/Ht: T851
 Form: 4 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.33
 Environment: DRY AIR; RT

Yield Strength: 57.3 ksi
 Ult. Strength: 63.7 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 2.55 in.
 Ref: AL001

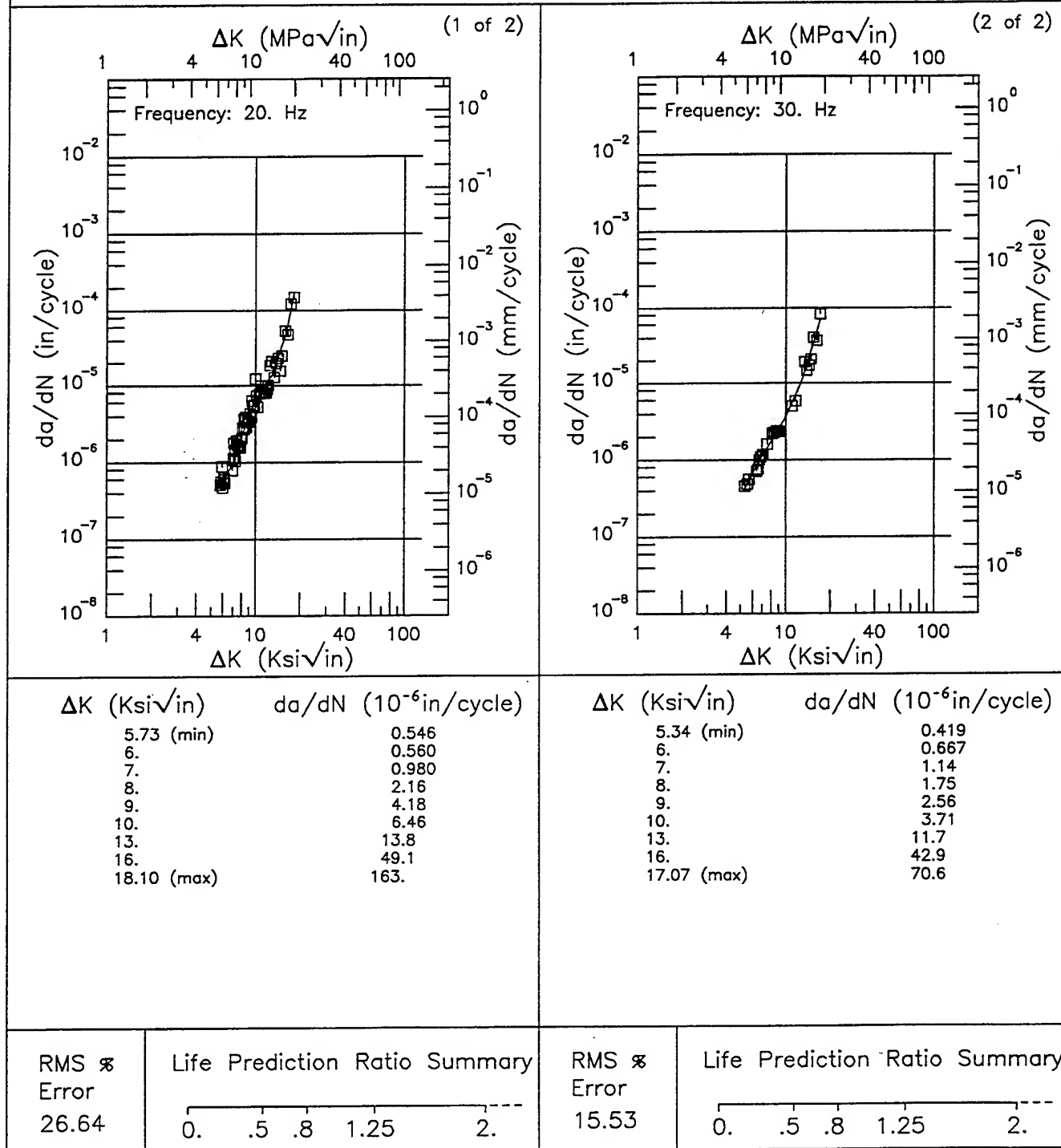
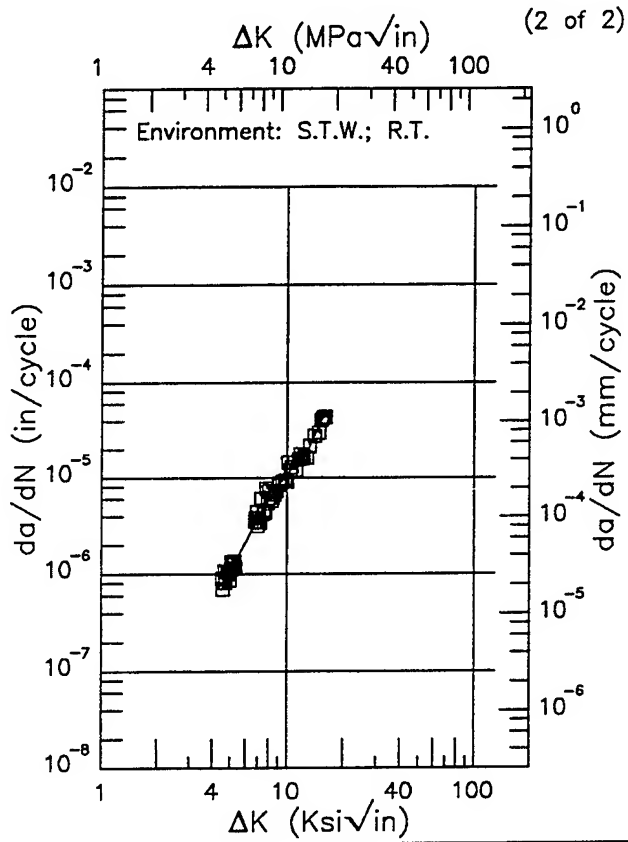
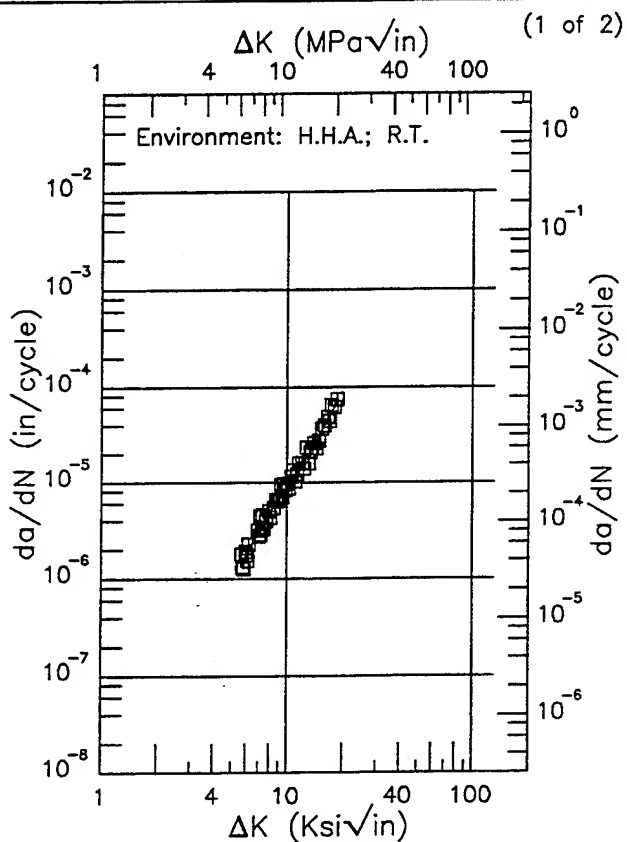


Figure 7.7.3.1.4

E 2048

Condition/Ht: T851
 Form: 1 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.33
 Frequency: 2 - 20 Hz

Yield Strength: 65.4 ksi
 Ult. Strength: 70.5 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.805 in.
 Ref: AL001



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.67 (min)	1.40
6.	1.74
7.	3.05
8.	4.76
9.	6.83
10.	9.24
13.	19.4
16.	41.1
18.55 (max)	74.2

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.50 (min)	0.697
5.	1.05
6.	2.12
7.	3.74
8.	5.86
9.	8.32
10.	10.9
13.	19.6
15.99 (max)	49.0

RMS %
 Error
 13.56

Life Prediction Ratio Summary

 0. .5 .8 1.25 2.

RMS %
 Error
 14.53

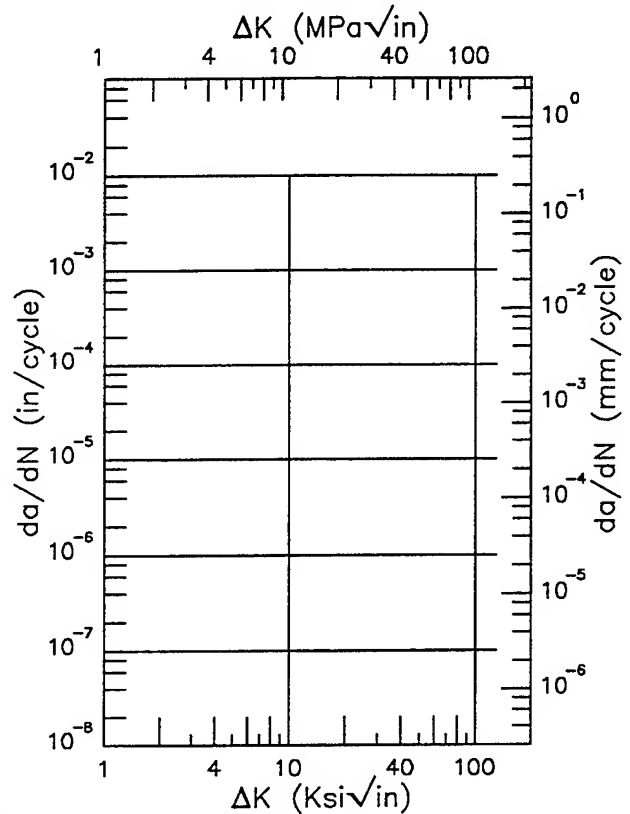
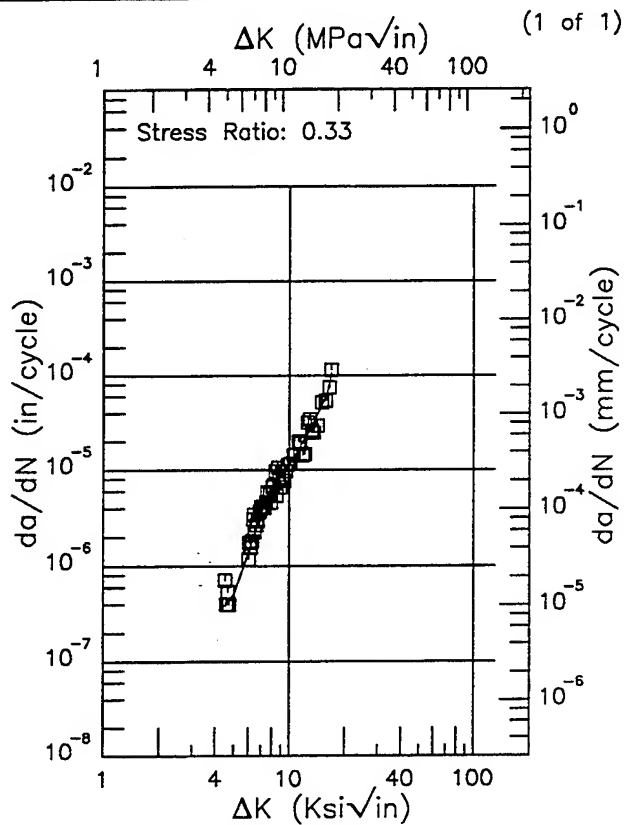
Life Prediction Ratio Summary

 0. .5 .8 1.25 2.

Figure 7.7.3.1.5

Condition/Ht: T851
 Form: 4 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 2 - 20 Hz
 Environment: S.T.W.; RT

Yield Strength: 57.3 ksi
 Ult. Strength: 63.7 ksi
 Specimen Thk: 1 in.
 Specimen Width: 2.55 in.
 Ref: AL001



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.51 (min)	0.388
5.	0.502
6.	1.33
7.	3.46
8.	6.44
9.	8.91
10.	11.2
13.	26.3
16.	63.0
16.89 (max)	106.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
--------------------------------------	-------------------------------

RMS %
 Error
 24.64

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

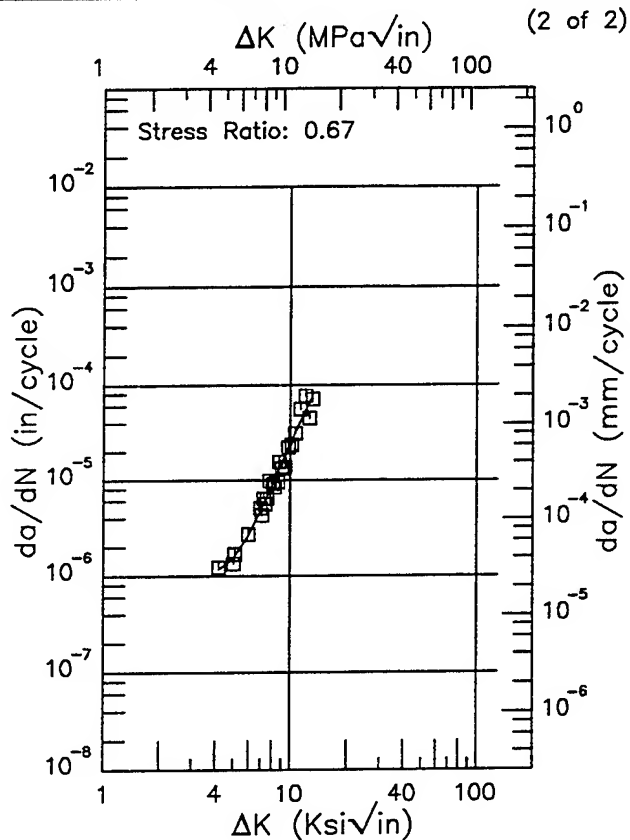
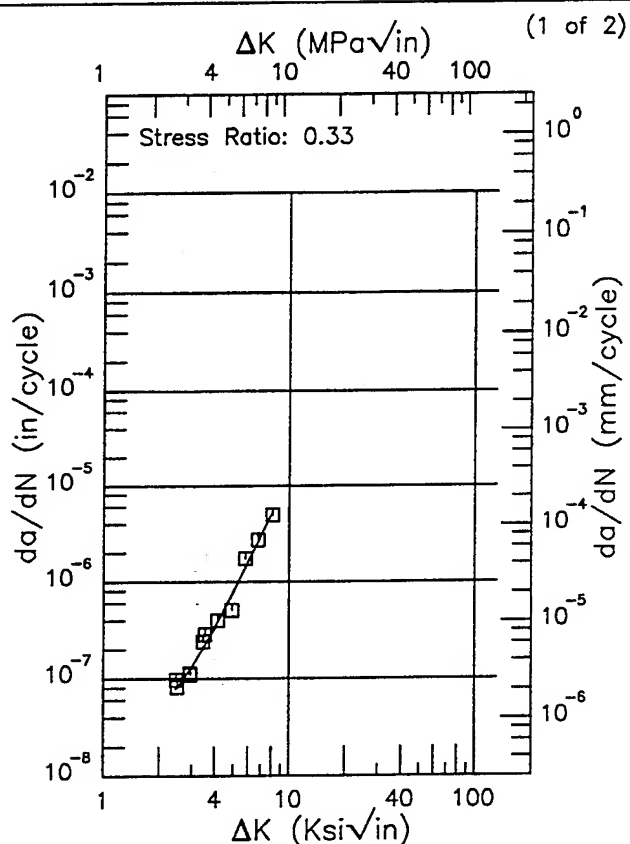
Figure 7.7.3.1.6

R

2048

Condition/Ht: T851
 Form: 4 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 30 Hz
 Environment: S.T.W.; RT

Yield Strength: 57.3 ksi
 Ult. Strength: 63.7 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 2.55 in.
 Ref: AL001



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
2.46 (min)	0.0778
2.5	0.0808
3.	0.131
3.5	0.213
4.	0.337
5.	0.777
6.	1.60
7.	2.97
8.	5.05
8.09 (max)	5.28

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
4.19 (min)	1.16
5.	1.52
6.	2.61
7.	4.81
8.	8.72
9.	15.1
10.	24.6
13.	73.6
13.10 (max)	75.7

RMS %
 Error
 17.95

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error
 18.31

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.7.3.1.7

Condition/Ht: T851
 Form: 4 in. Plate
 Specimen Type: CT
 Orientation: S-L
 Stress Ratio: 0.33
 Frequency: 2 - 20 Hz

Yield Strength: 56 ksi
 Ult. Strength: 62.5 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.805 in.
 Ref: AL001

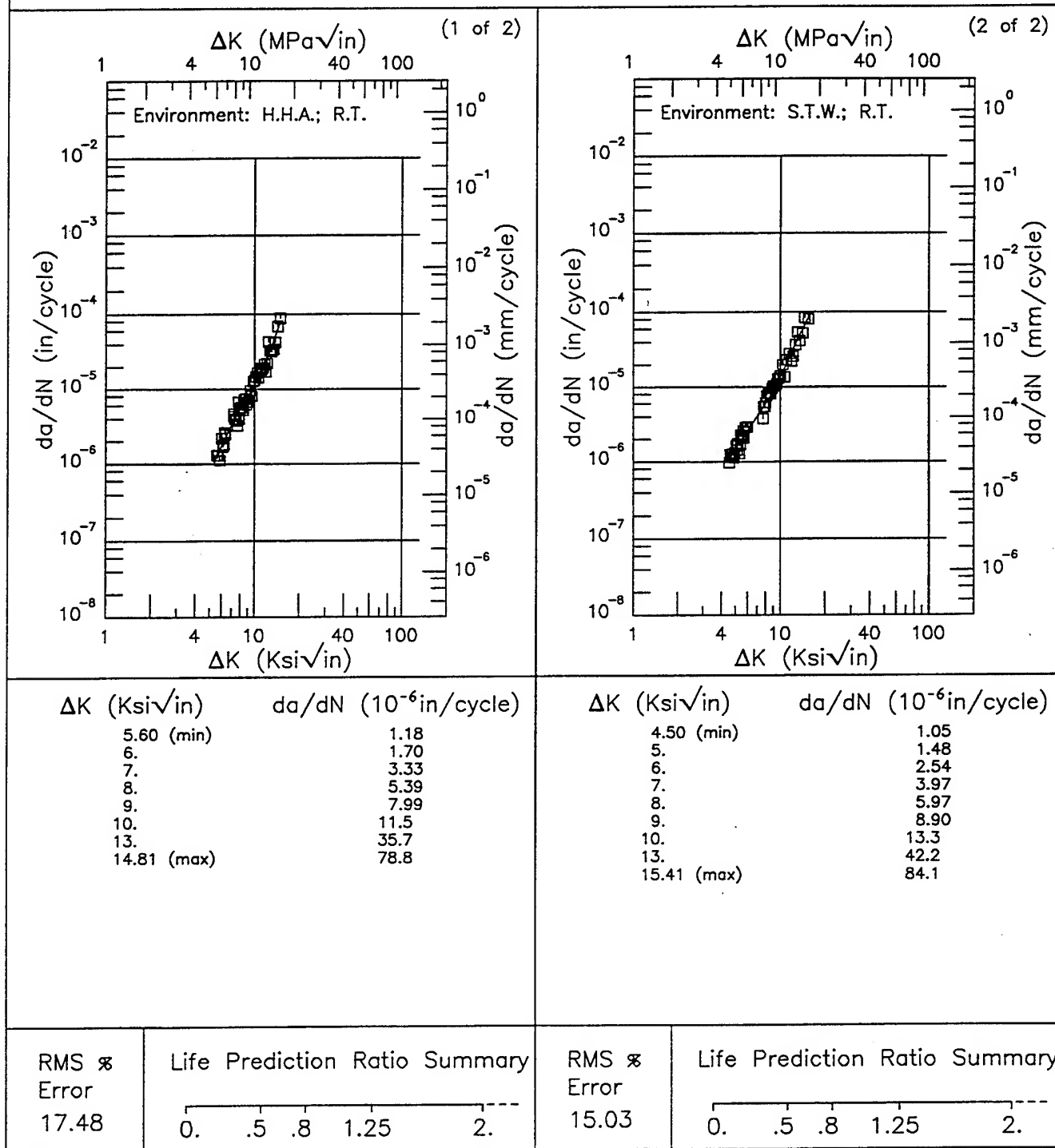


Figure 7.7.3.1.8

TABLE 7.8.1.2.1

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2091 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T8	FORGING	0.1	10				31.48		
		0.	10		0.29	6.52	21.28		
		0.1	10		0.35	7.55			
		0.5	10		1.49	10.05	86.99		
T8 275F 12HRS	SHEET	0.	10						
		0.1	10			5.71	24.79		
		0.1	10			5.69	21.89		
		0.5	10		1.56	10.52	73.37		
T8 275F 12HRS	PLATE	0.1	10						
		0.1	10						
		0.1	10						
		0.5	10						

TABLE 7.8.1.2.2

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2091 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T3	SHEET	0.02	1-10			3.46	11.27		
T81 335F 32HRS	SHEET	0.1	5			6.18	37.78		
T851 335F 16HRS	PLATE	0.1	5			6.36	56.32		

TABLE 7.8.1.2.3

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2091 AT ROOM TEMPERATURE**

ORIENTATION: T-L

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T6	FORGING	0.1	10			1.69	49.08		
		0.	10		0.18	5.06	24.87		
		0.1	10		0.71	3.98			
		0.5	10		1.39	7.9			
T8 275F 12HRS	SHEET	0.	10		0.14	5.3	17.66		
		0.1	10			4.94	28.8		
		0.5	12		0.67	7.52	95.59		
	PLATE								

TABLE 7.8.1.2.4

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2091 AT ROOM TEMPERATURE

ORIENTATION: T-L

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level ($K\sqrt{in}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T3	SHEET	0.02	1-25		0.46	2.42	28.28		
T81 335F 32HRS	SHEET	0.1	5		0.41	3.76	40.5		
T861 335F 16HRS	PLATE	0.1	5		0.58	7.59	61.17		

TABLE 7.8.1.2.5

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2091 AT ROOM TEMPERATURE**

ORIENTATION: C-S				ENVIRONMENT: H.H.A.						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
				ΔK Level ($K\sqrt{\text{in}}$)						
				2.5	5.0	10.0	20.0	50.0	100.0	
T8 275F 12HRS	SHEET	0.	10			10.42	30.73			
		0.5	10		2.65	16.41				
	PLATE	0.	10		0.84	11.07	131.91			
		0.5	10		2.55	17.54				

RESISTANCE CURVE

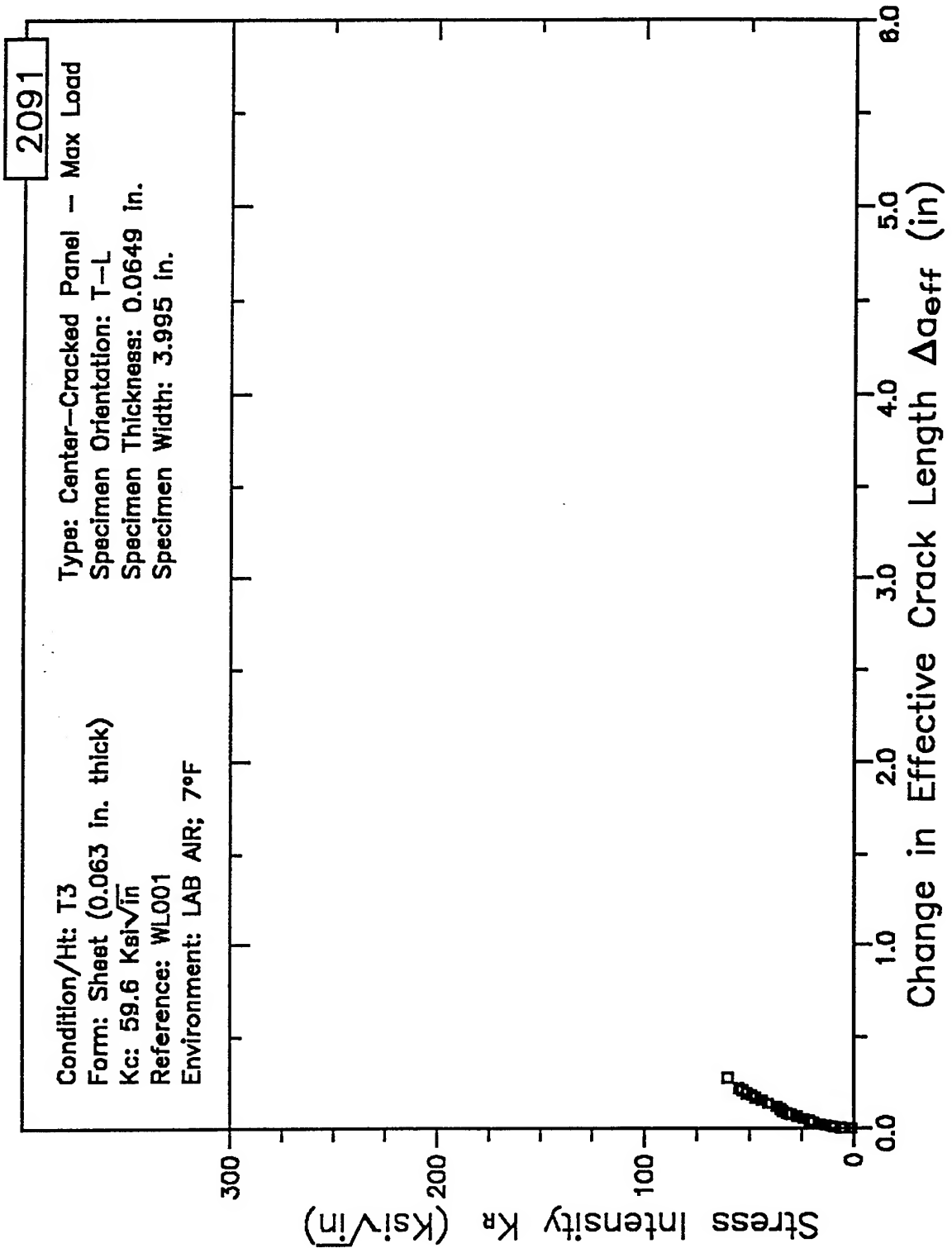


Figure 7.8.2.3.1

RESISTANCE CURVE

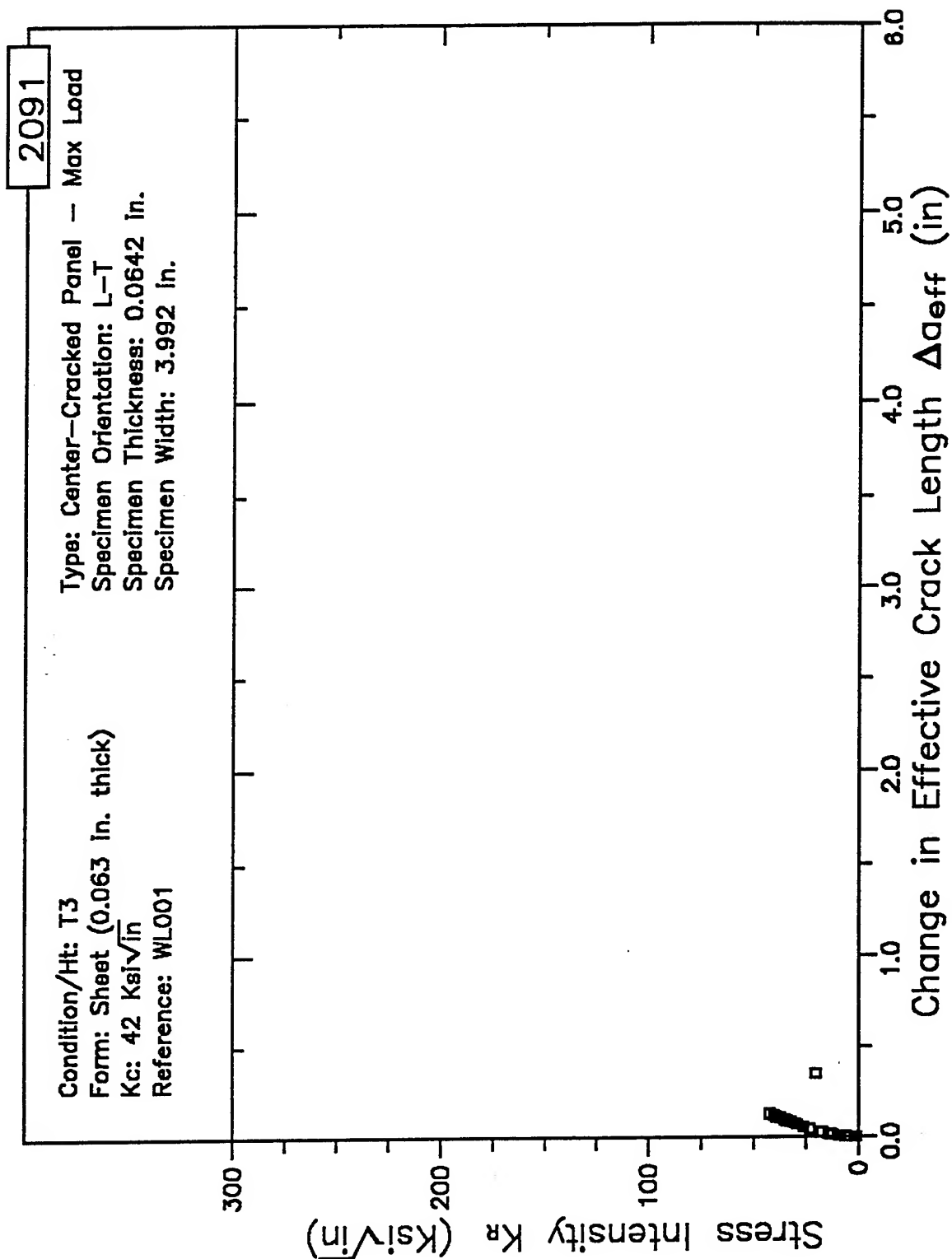


Figure 7.8.2.3.2

RESISTANCE CURVE

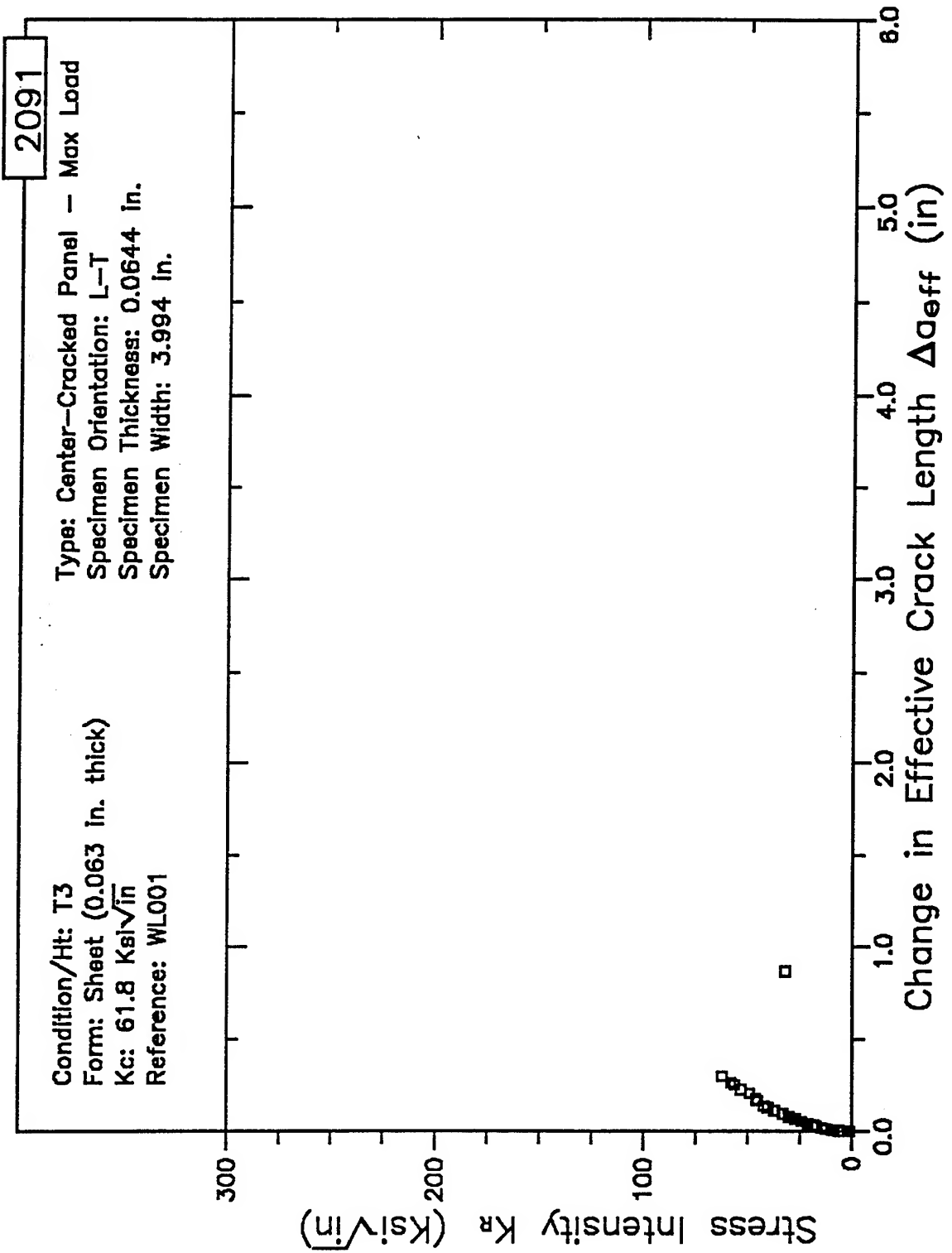


Figure 7.8.2.3.3

RESISTANCE CURVE

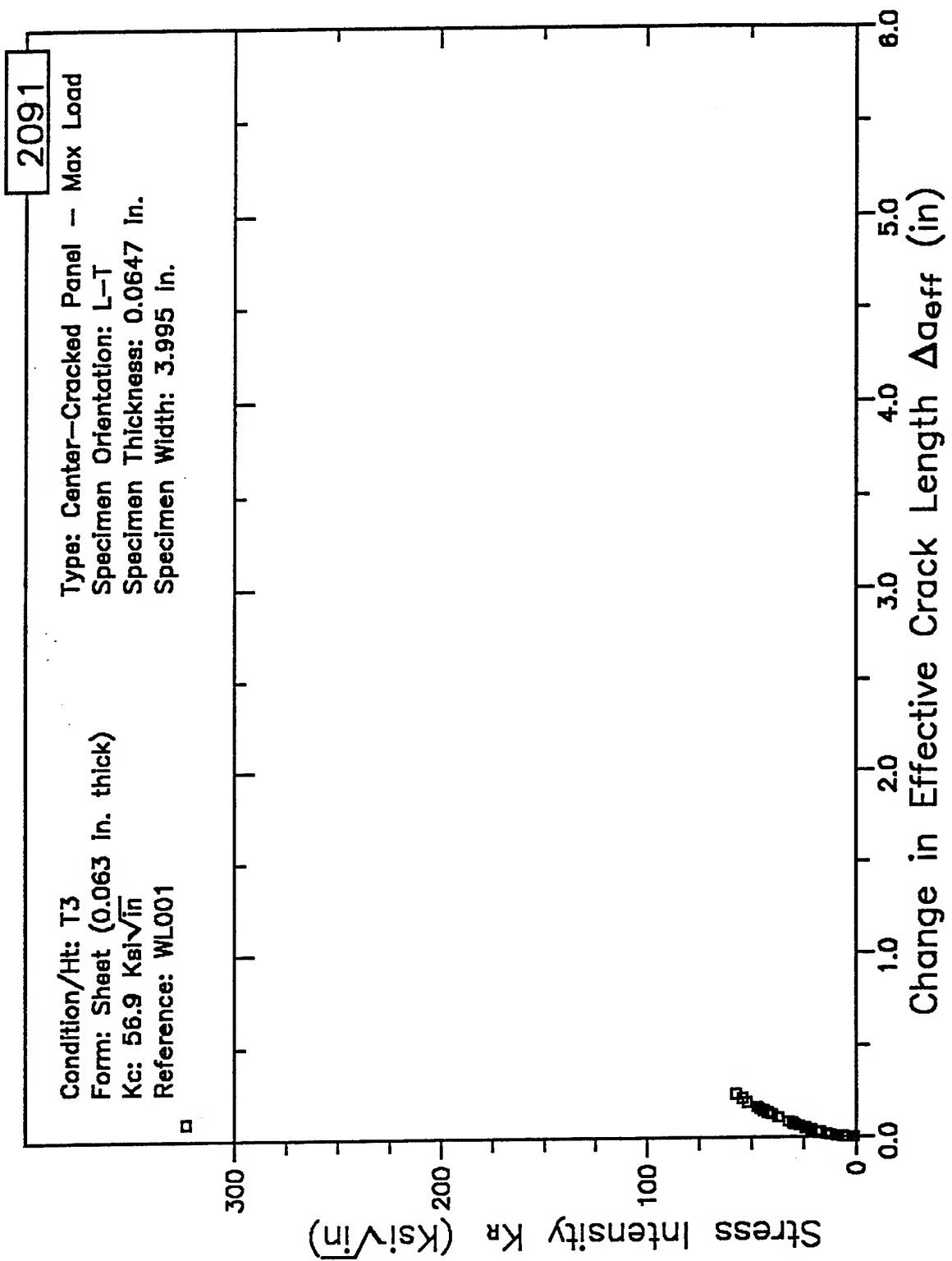


Figure 7.8.2.3.4

RESISTANCE CURVE

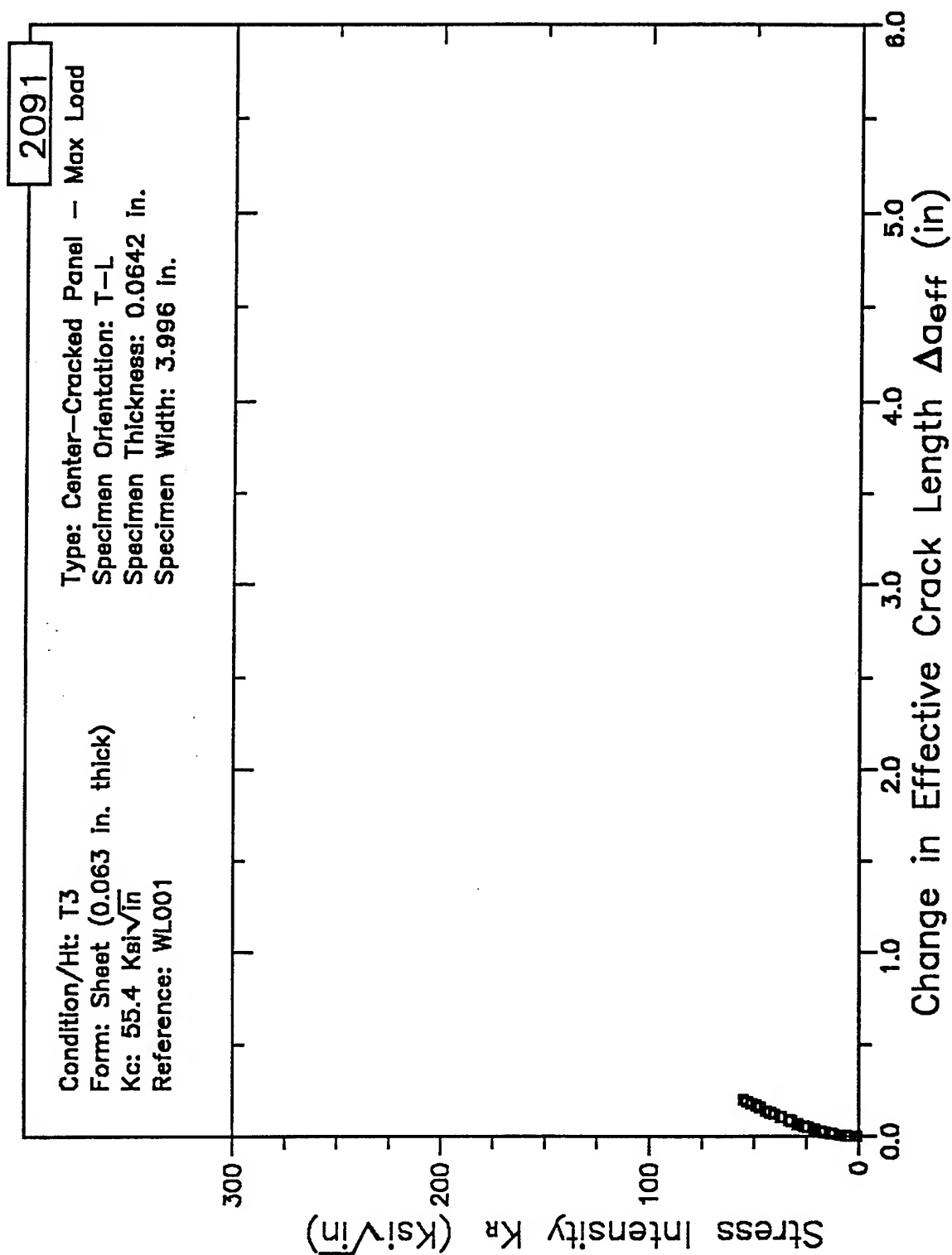


Figure 7.8.2.3.5

RESISTANCE CURVE

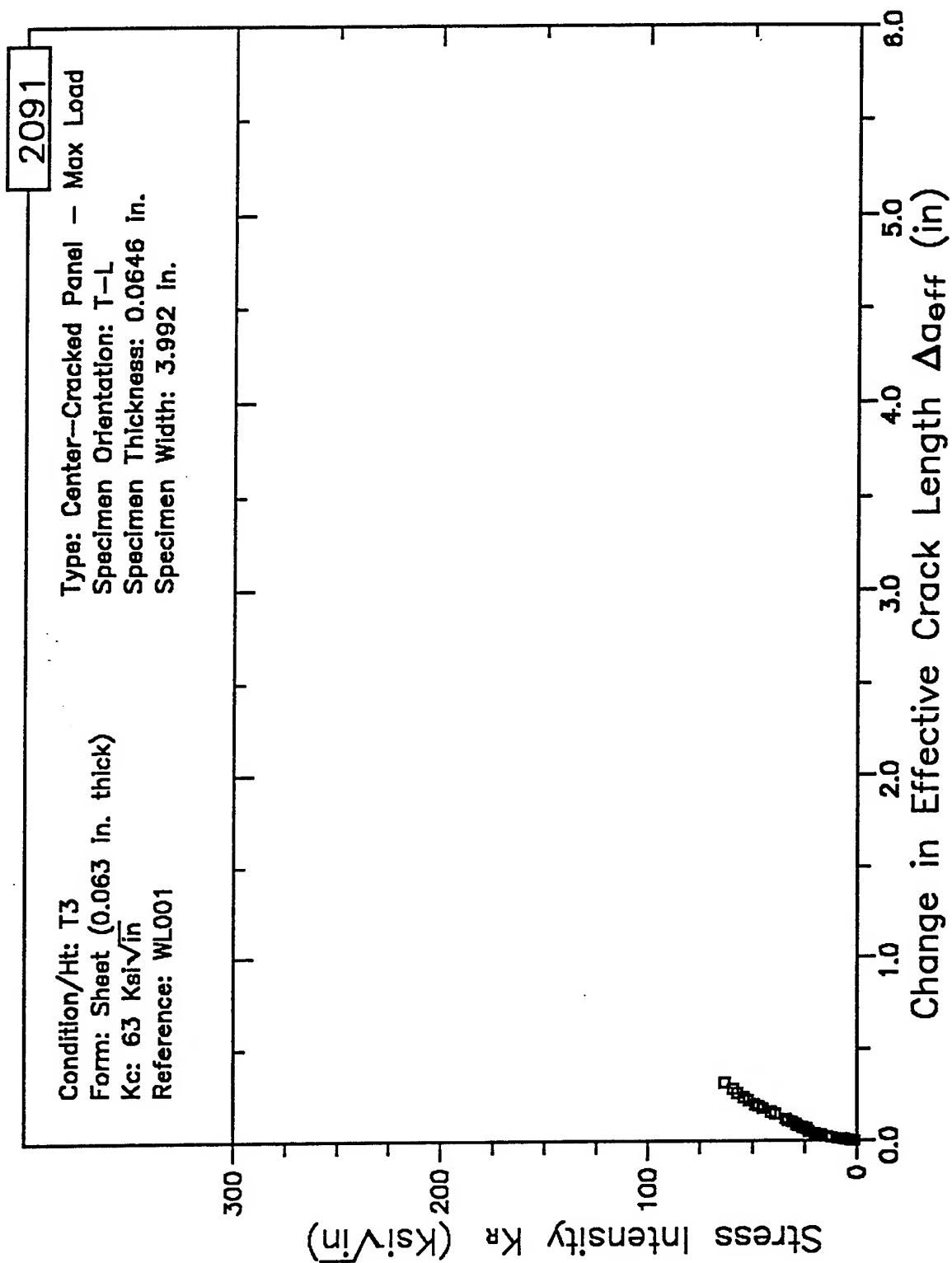


Figure 7.8.2.3.6

RESISTANCE CURVE

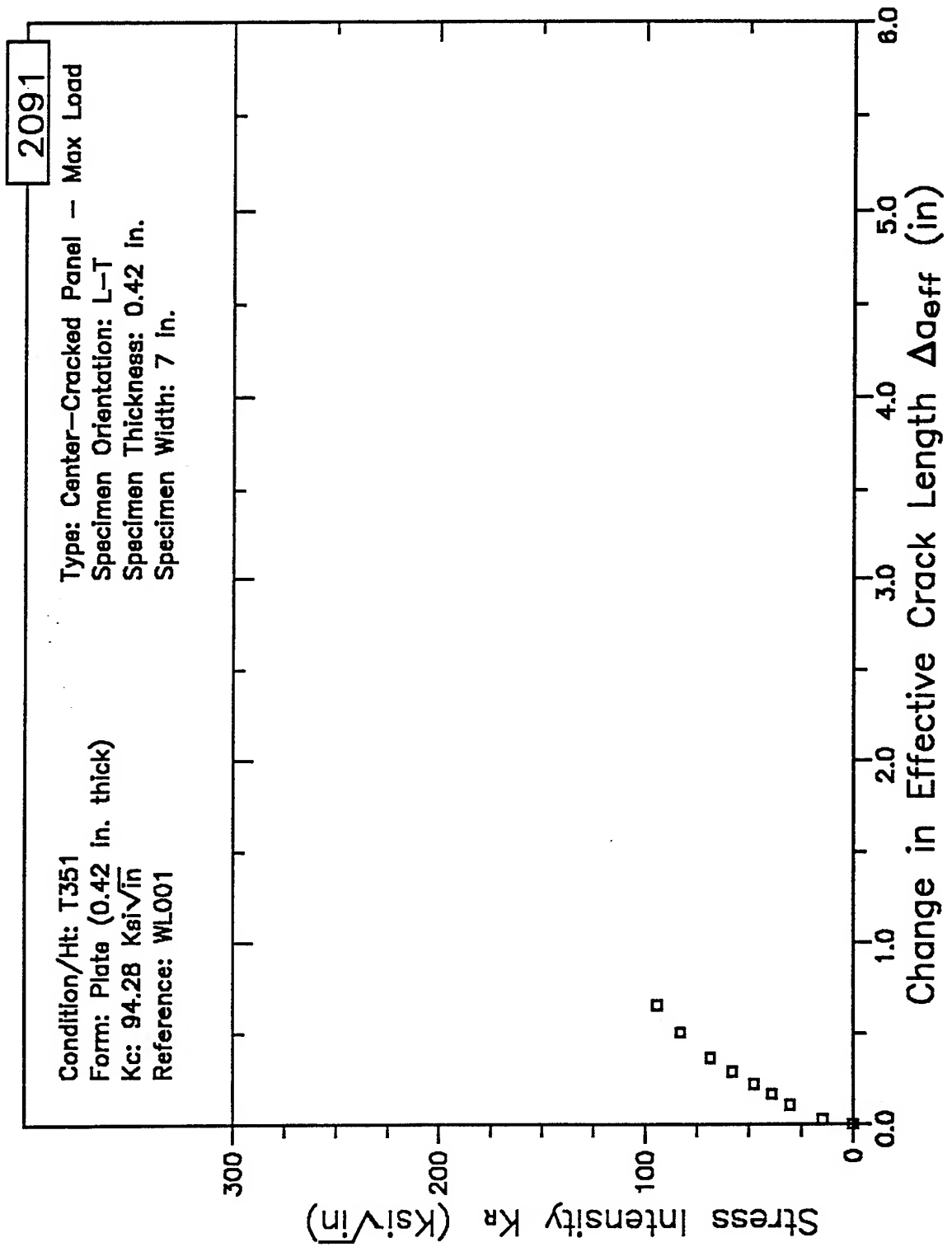


Figure 7.8.2.3.7

RESISTANCE CURVE

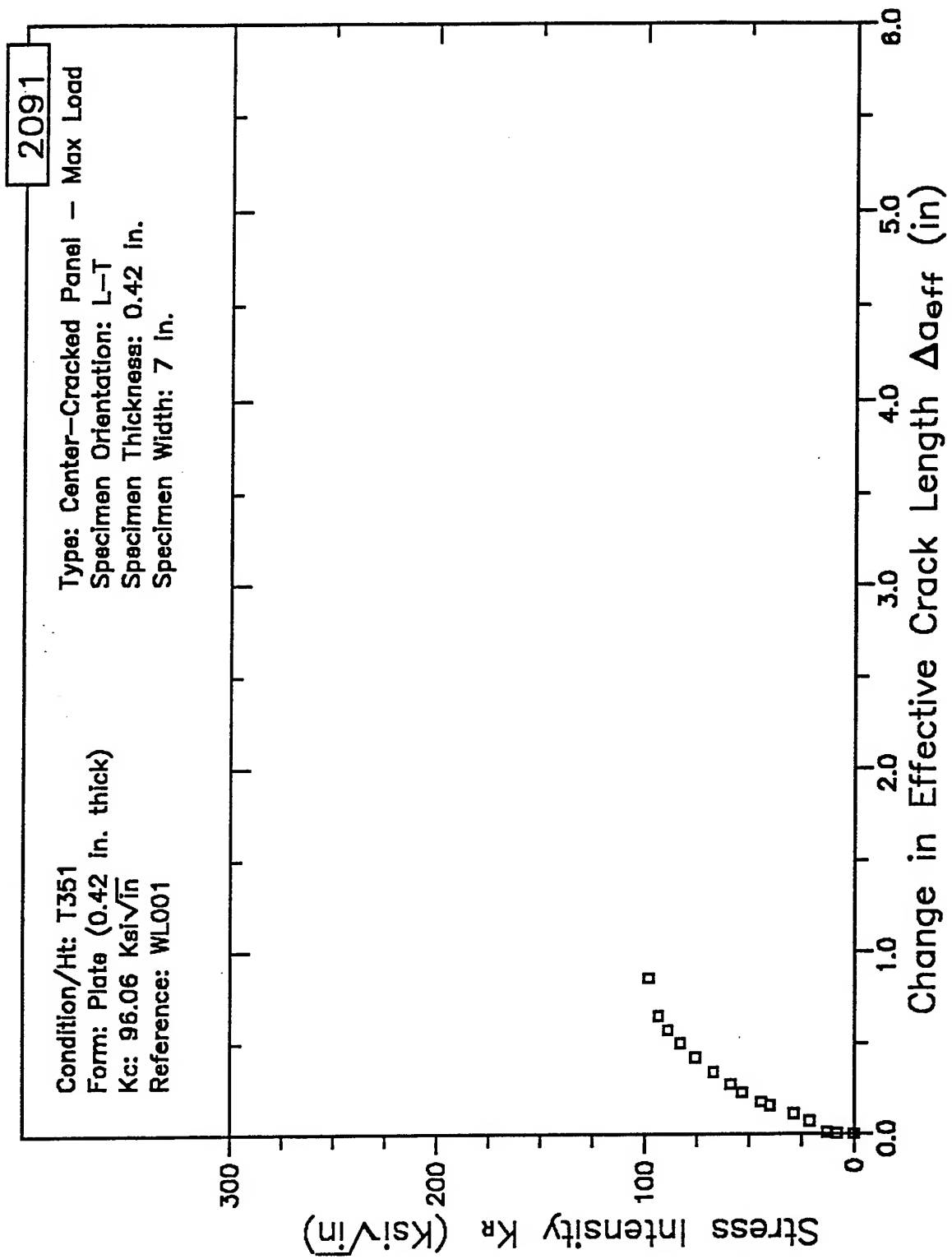


Figure 7.8.2.3.8

RESISTANCE CURVE

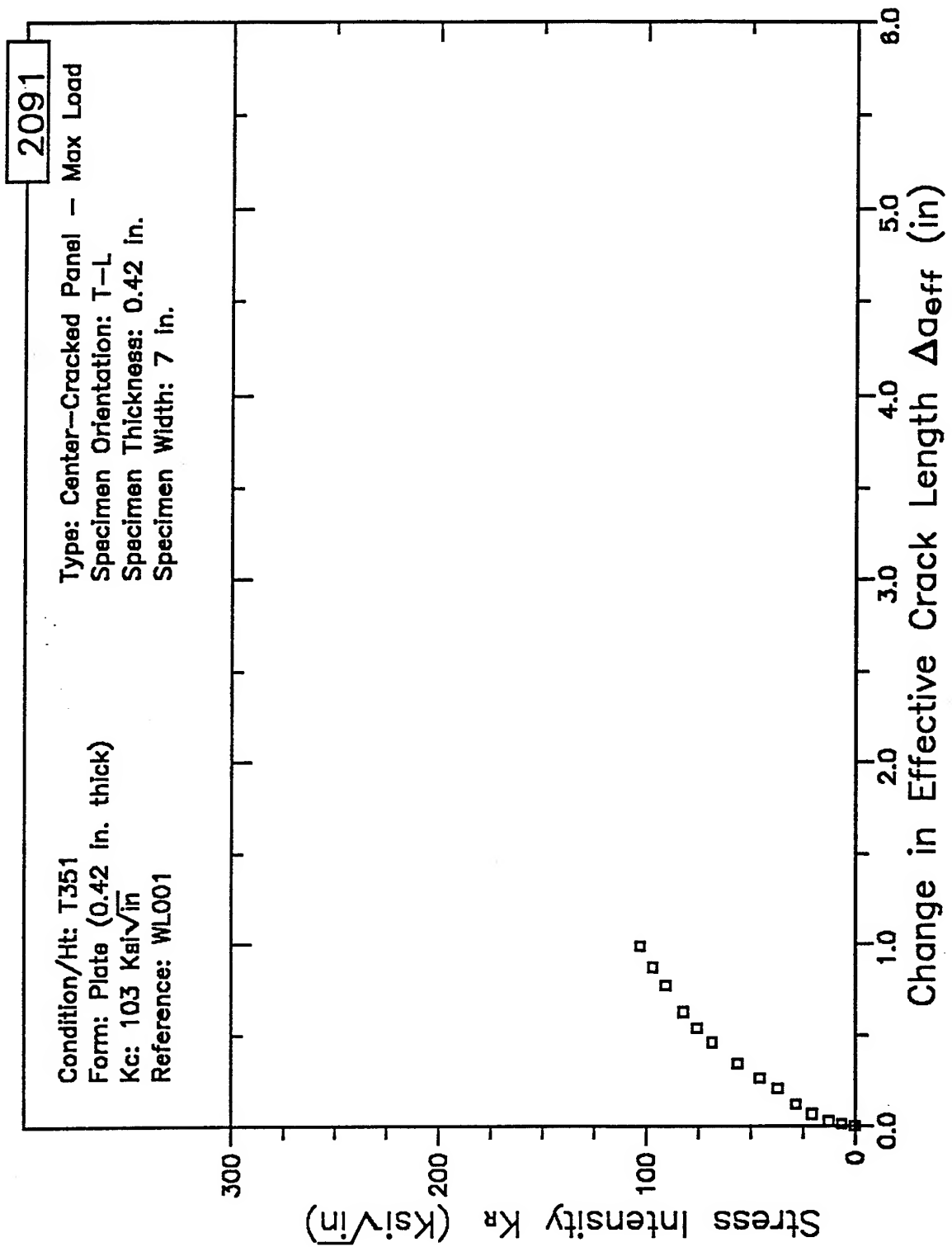


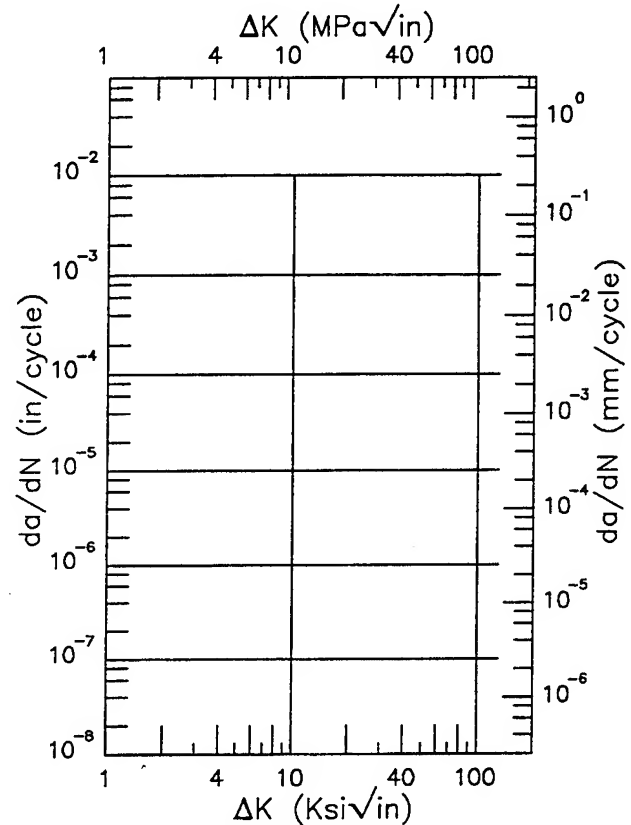
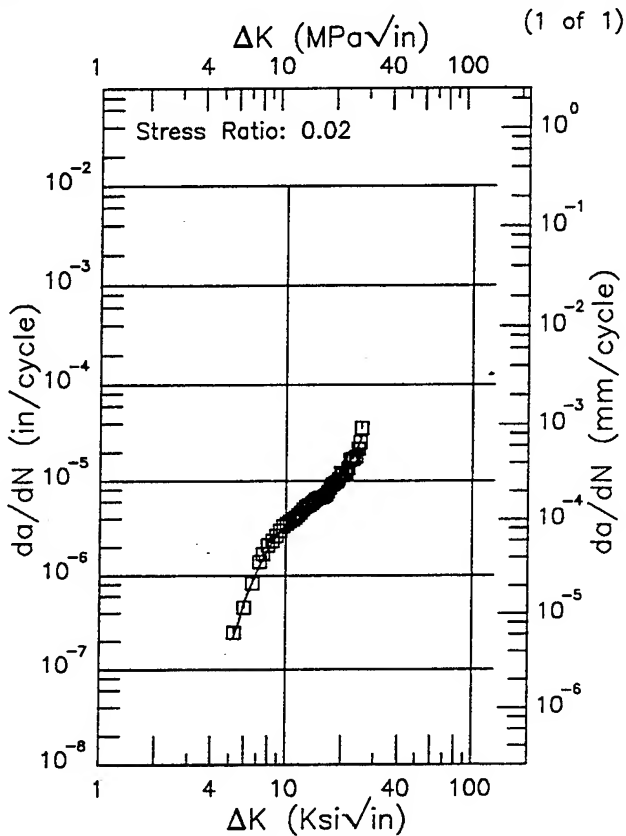
Figure 7.8.2.3.9

R

2091

Condition/Ht: T3
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 - 10 Hz
 Environment: LAB AIR; RT

Yield Strength: 42.3 ksi
 Ult. Strength: 61 ksi
 Specimen Thk: 0.064 in.
 Specimen Width: 3.912 in.
 Ref: WL001



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
5.25 (min)	0.216
6.	0.518
7.	1.14
8.	1.90
9.	2.70
10.	3.46
13.	5.40
16.	7.28
20.	11.3
25.	26.3
25.29 (max)	28.0

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10⁻⁶in/cycle)

RMS σ
 Error
 7.16

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS σ
 Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

Figure 7.8.3.1.1

Condition/Ht: T3
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 1 - 25 Hz
 Environment: LAB AIR; RT

Yield Strength: 42.5 ksi
 Ult. Strength: 57.3 ksi
 Specimen Thk: 0.071 in.
 Specimen Width: 3.914 in.
 Ref: WL001

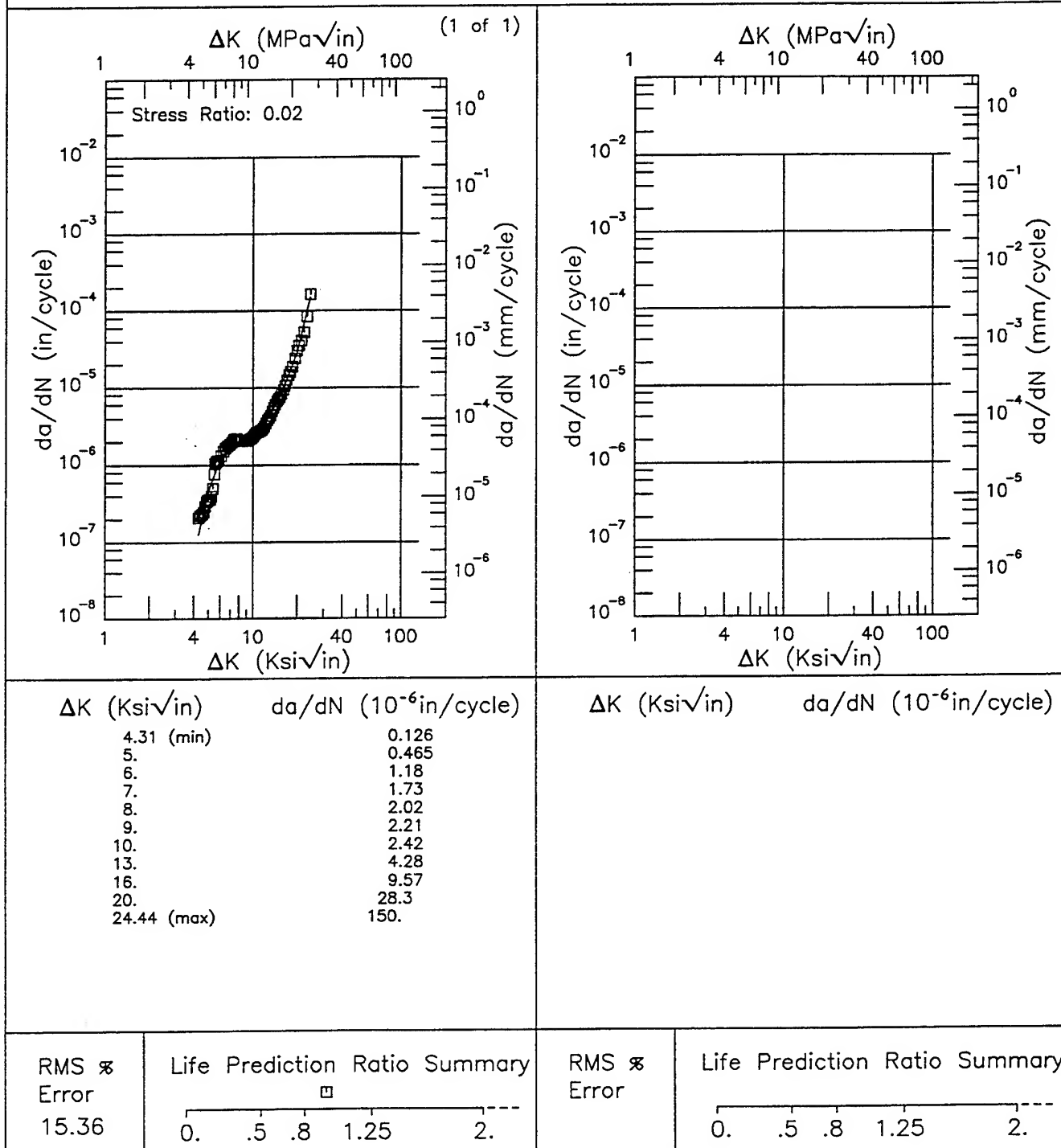


Figure 7.8.3.1.2

R

2091

Condition/Ht: T351
 Form: 0.42 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency:
 Environment: ;0.°F

Yield Strength: 46.7 ksi
 Ult. Strength: 64.7 ksi
 Specimen Thk: 0.423 in.
 Specimen Width: 2.007 in.
 Ref: WL001

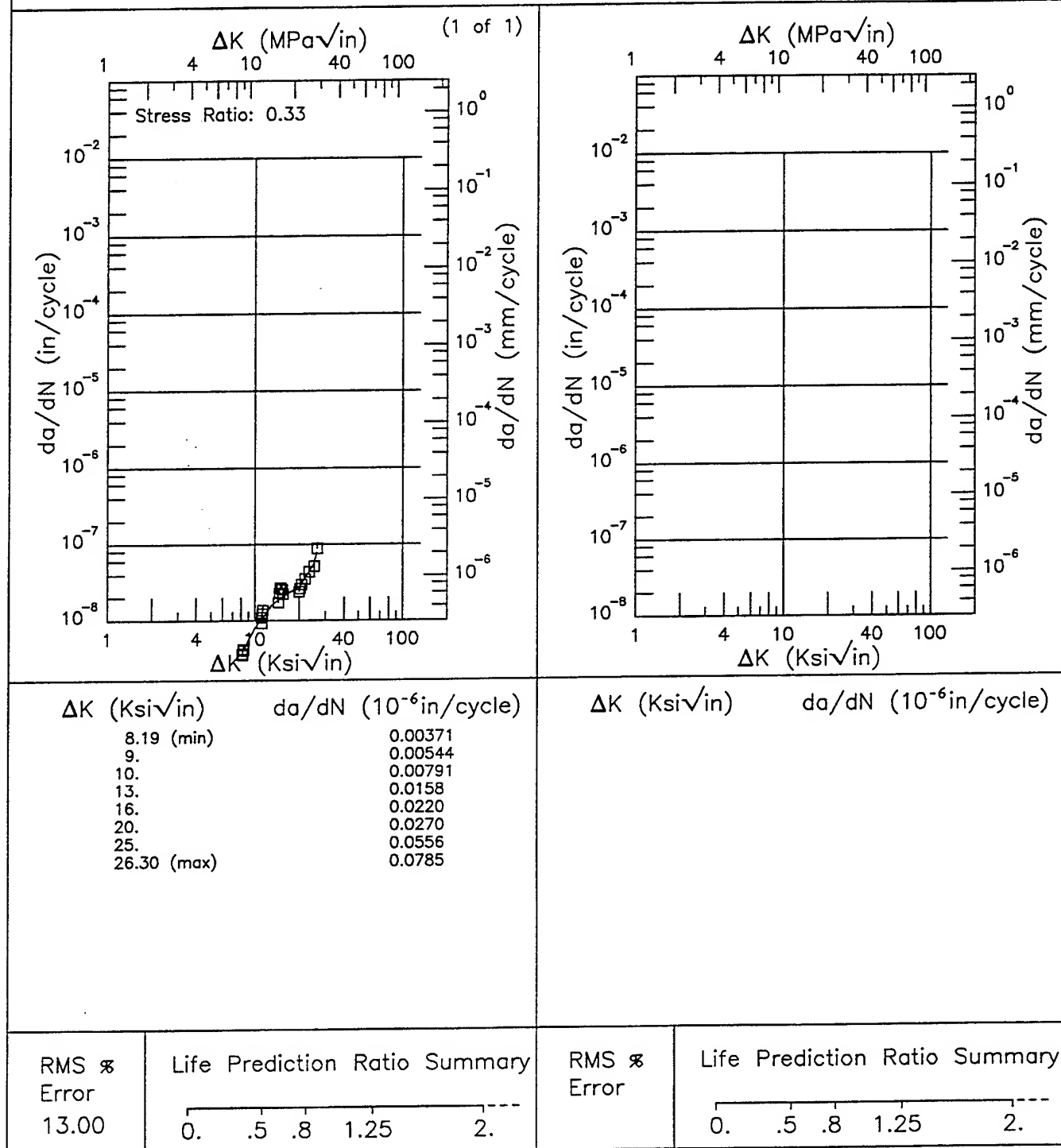


Figure 7.8.3.1.3

Condition/Ht: T351
 Form: 0.42 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency:
 Environment: ;0.°F

Yield Strength: 51.7 ksi
 Ult. Strength: 64.1 ksi
 Specimen Thk: 0.422 in.
 Specimen Width: 2.003 in.
 Ref: WL001

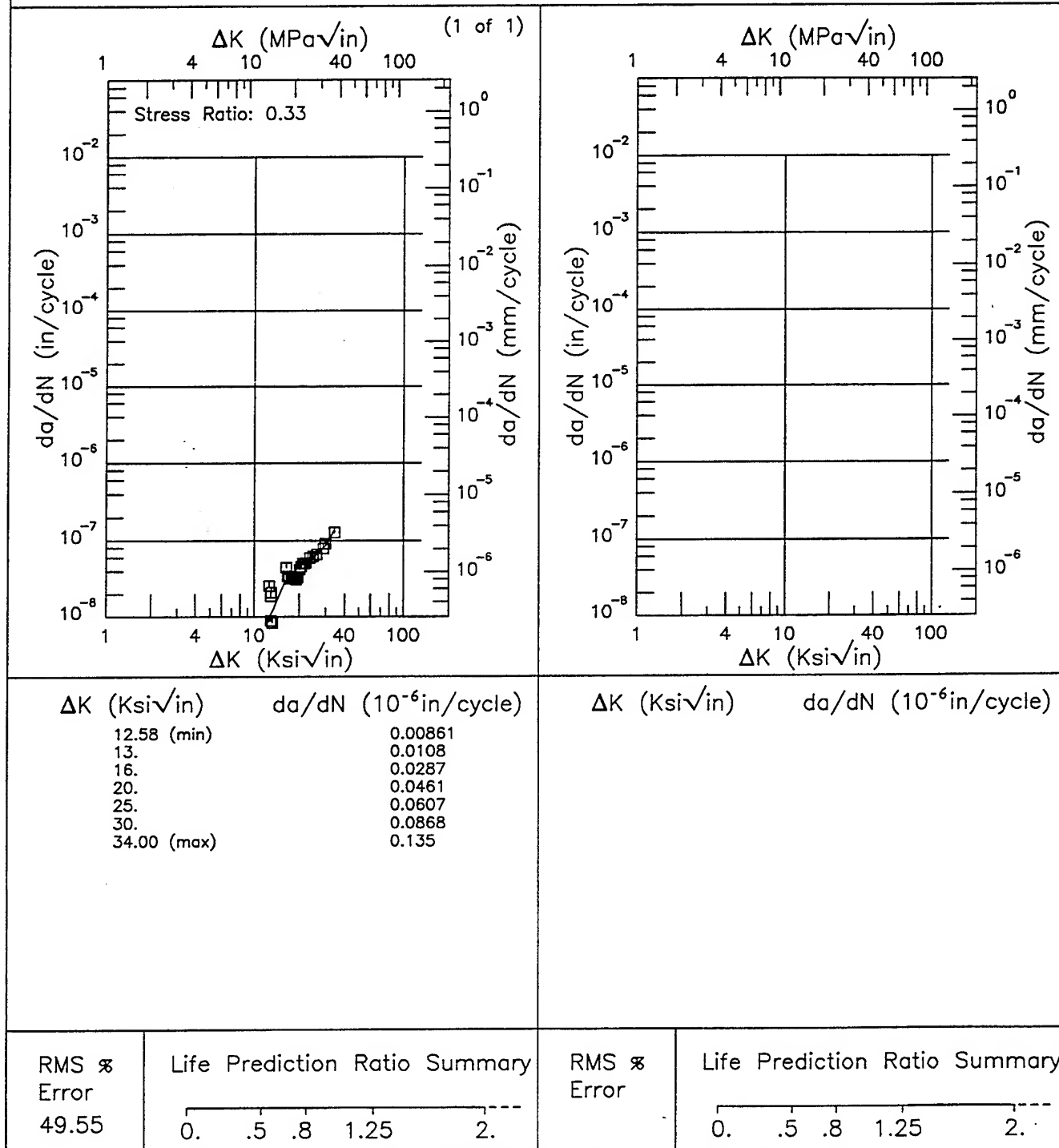


Figure 7.8.3.1.4

R

2091

Condition/Ht: T6
 Form: 2.24 in. Forging
 Specimen Type: CT
 Orientation: L-T
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 65.4 ksi
 Ult. Strength: 68.9 ksi
 Specimen Thk: 0.252 in.
 Specimen Width: 2.025 in.
 Ref: WL001

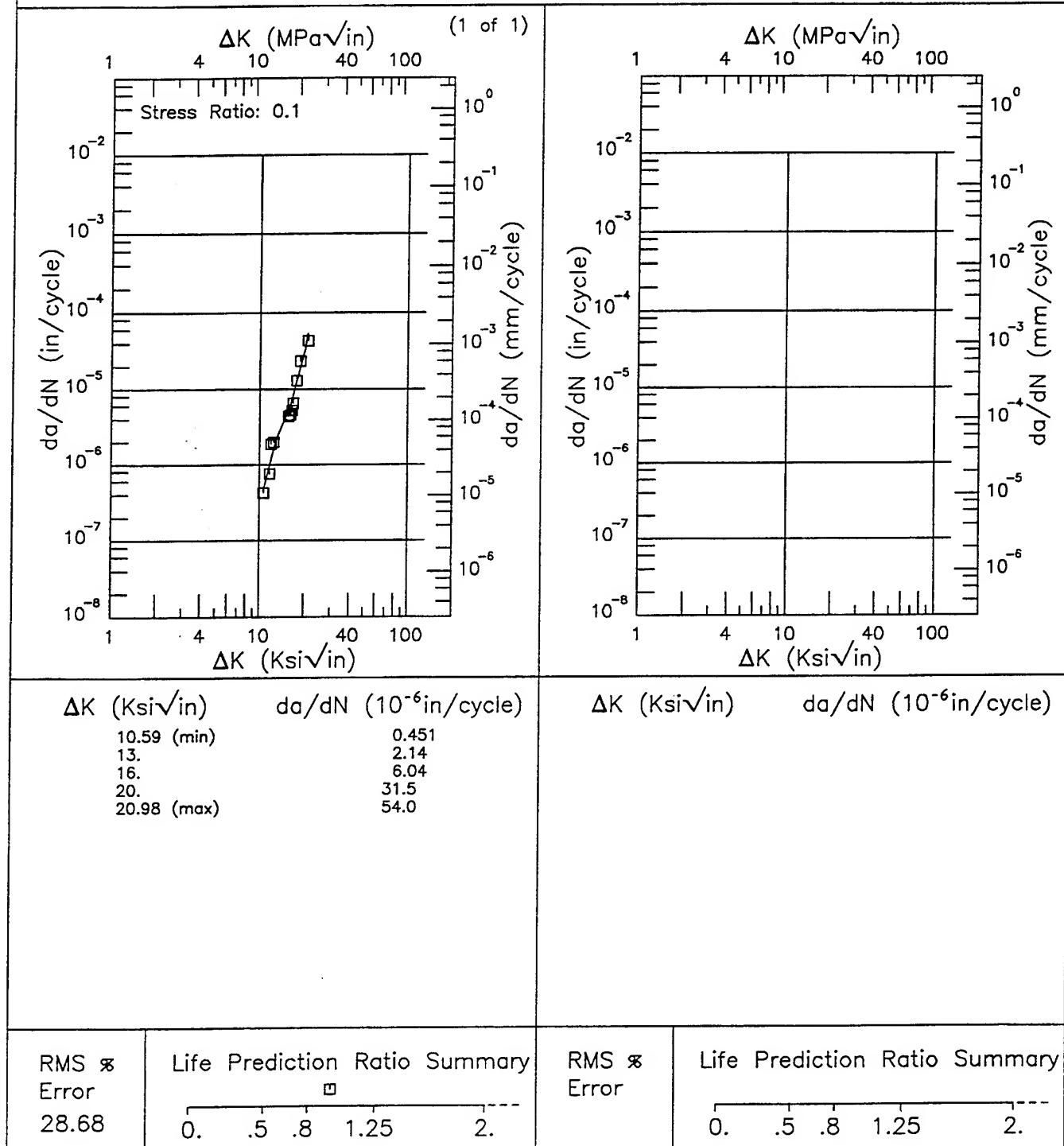


Figure 7.8.3.1.5

Condition/Ht: T6
 Form: 2.24 in. Forging
 Specimen Type: CT
 Orientation: T-L
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 69.6 ksi
 Ult. Strength: 79.7 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 2.002 in.
 Ref: WL001

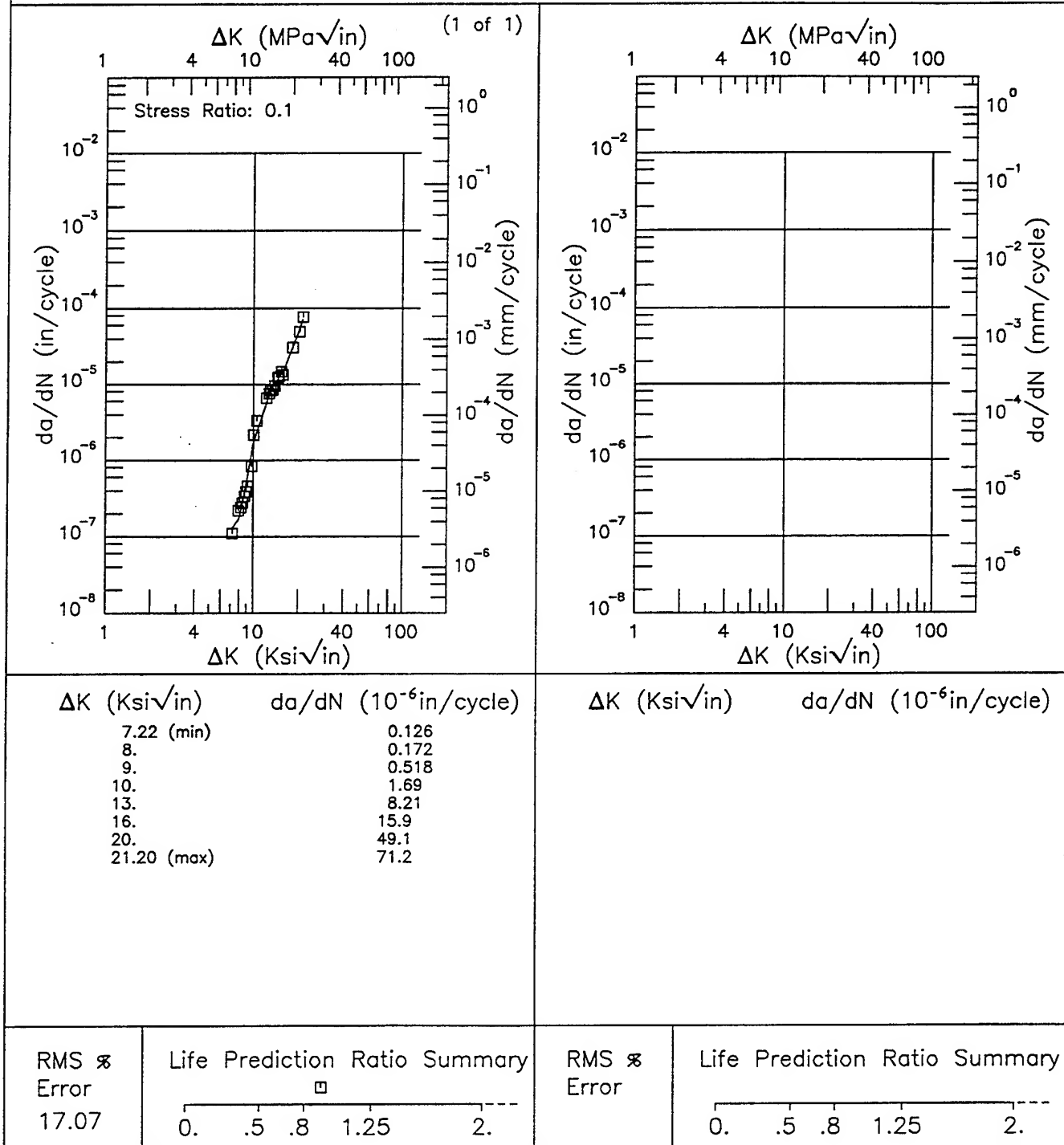


Figure 7.8.3.1.6

R

2091

Condition/Ht: T8 275F 12HRS
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 46.5 ksi
 Ult. Strength: 64.6 ksi
 Specimen Thk: 0.063 - 0.064 in.
 Specimen Width: 3.746 - 3.75 in.
 Ref: WL001

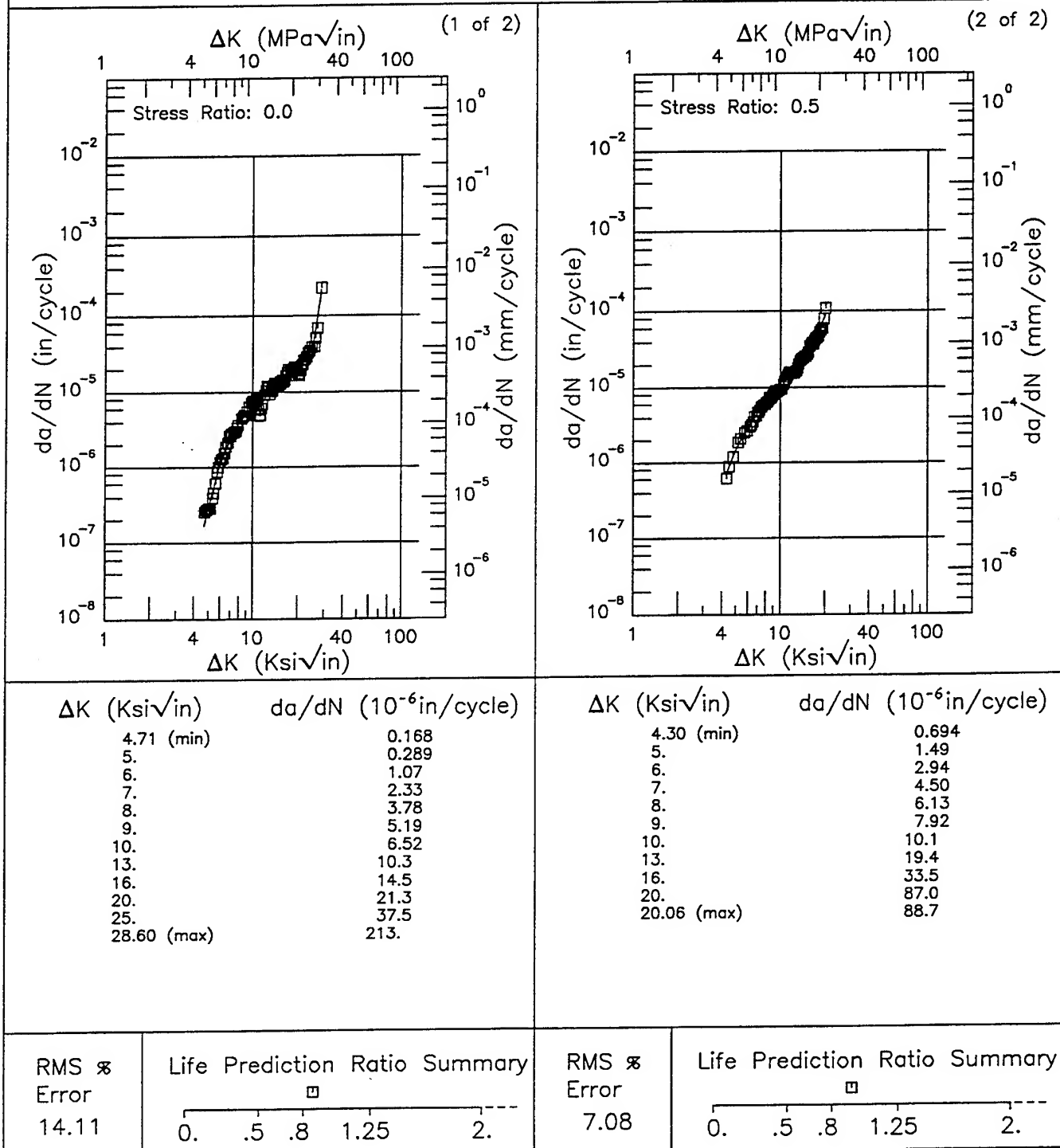


Figure 7.8.3.1.7

Condition/Ht: T8 275F 12HRS
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 47.7 ksi
 Ult. Strength: 66.2 ksi
 Specimen Thk: 0.063 in.
 Specimen Width: 3.003 in.
 Ref: WL001

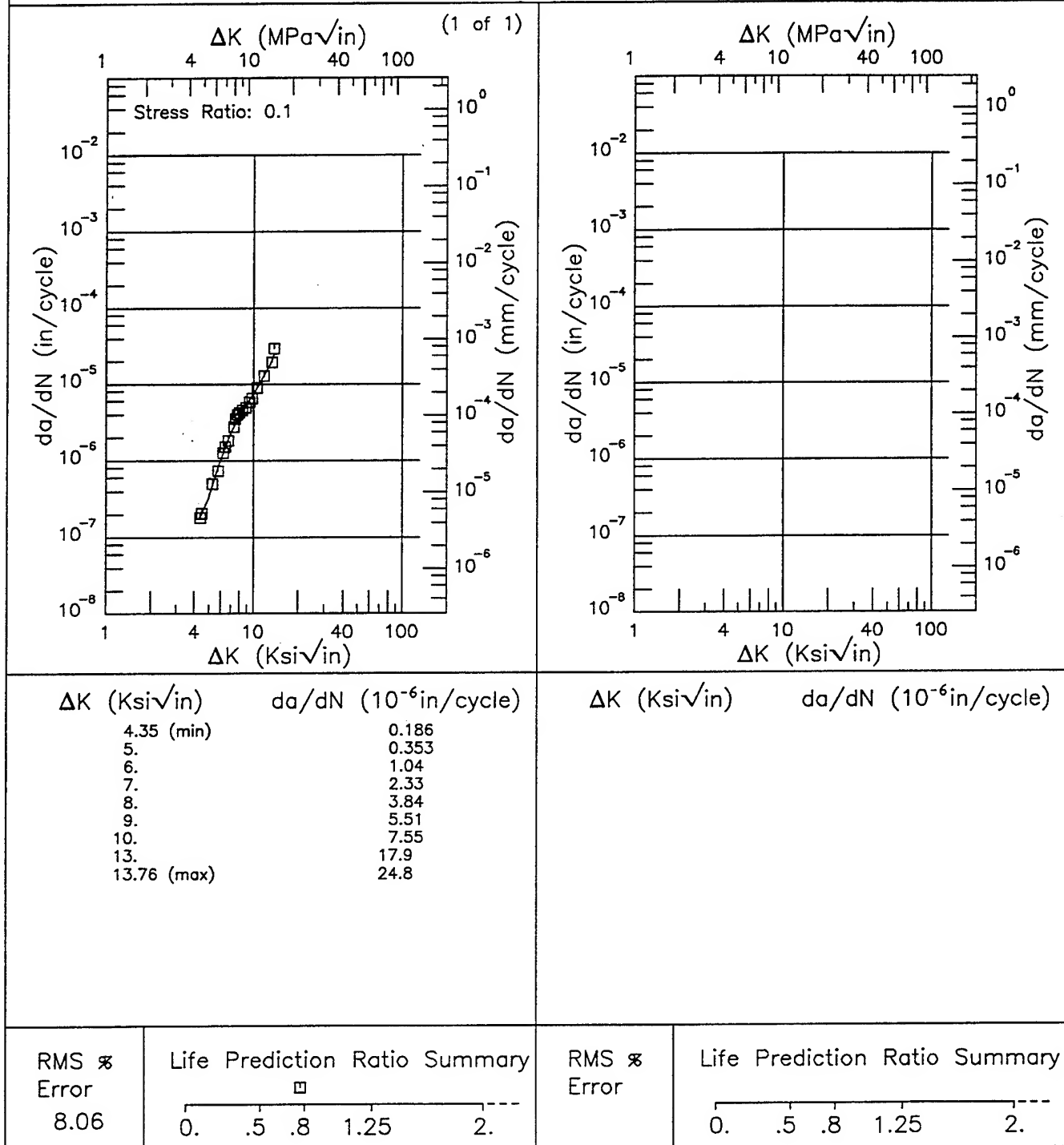


Figure 7.8.3.1.8

R

2091

Condition/Ht: T8 275F 12HRS
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 47.4 ksi
 Ult. Strength: 62.1 ksi
 Specimen Thk: 0.062 - 0.064 in.
 Specimen Width: 3.75 - 3.751 in.
 Ref: WL001

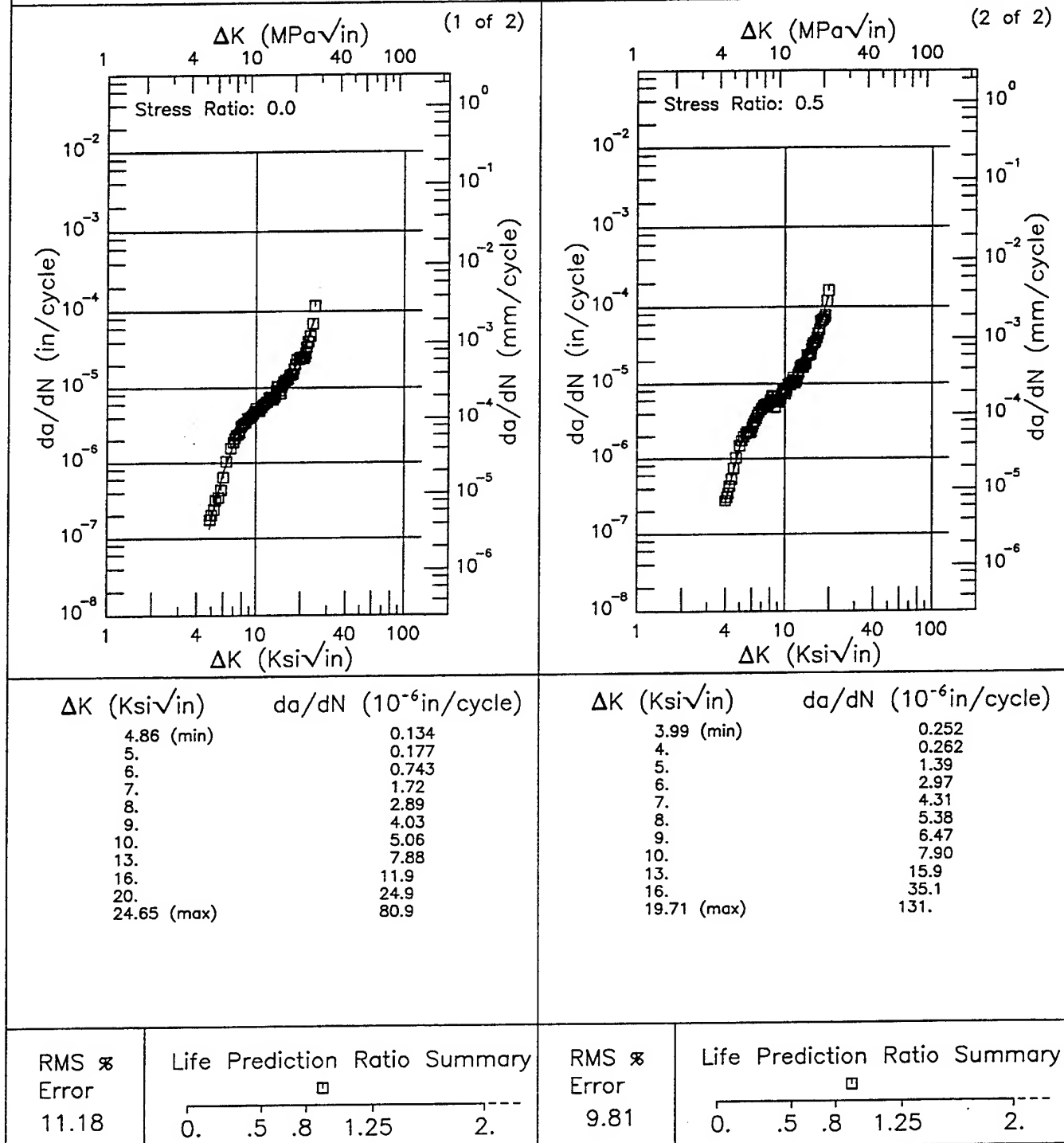


Figure 7.8.3.1.9

Condition/Ht: T8 275F 12HRS
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 47.5 ksi
 Ult. Strength: 63 ksi
 Specimen Thk: 0.063 in.
 Specimen Width: 3 in.
 Ref: WL001

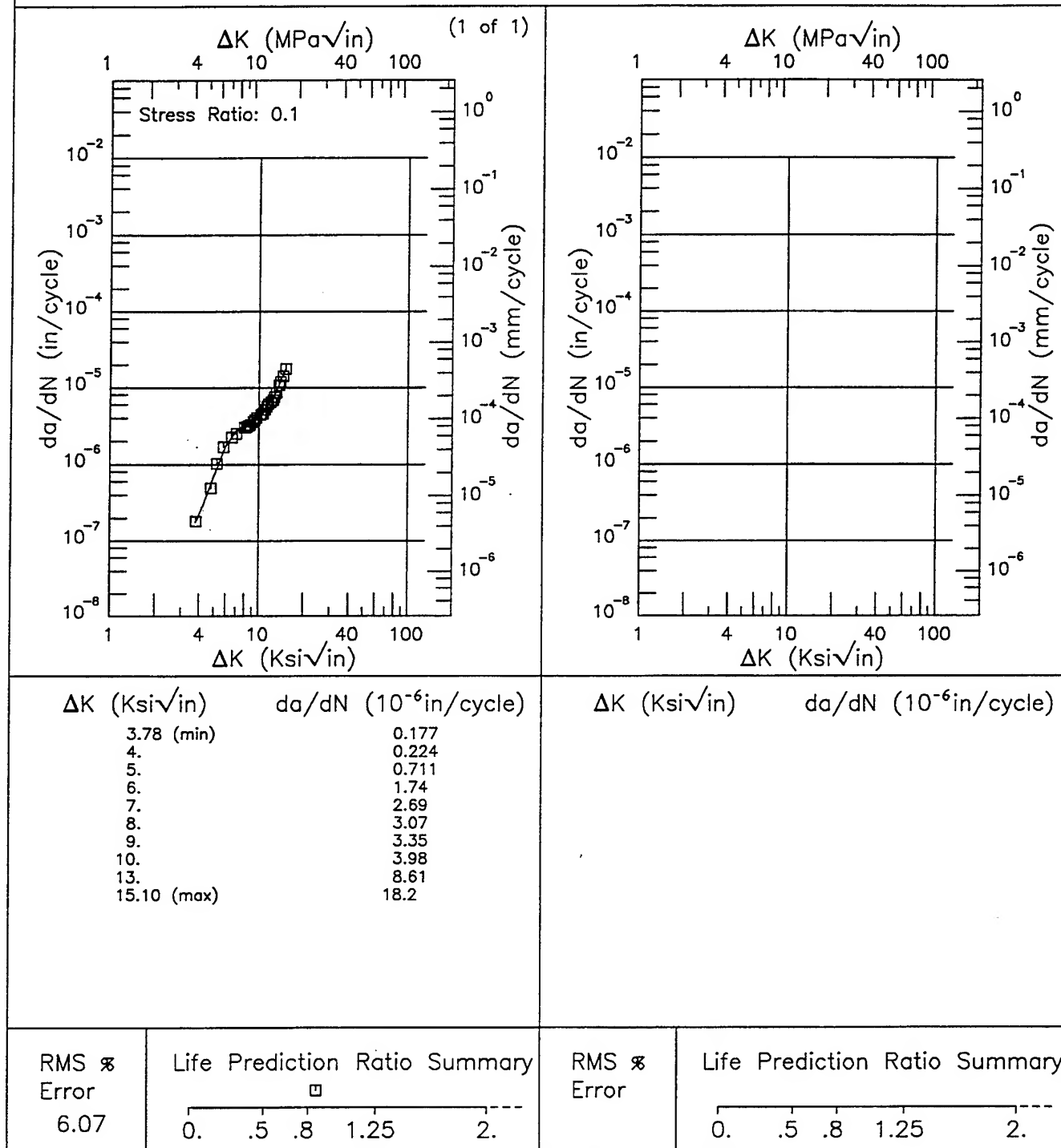


Figure 7.8.3.1.10

R

2091

Condition/Ht: T8 275F 12HRS
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T45
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 44.2 ksi
 Ult. Strength:
 Specimen Thk: 0.064 - 0.066 in.
 Specimen Width: 3.748 - 3.751 in.
 Ref: WL001

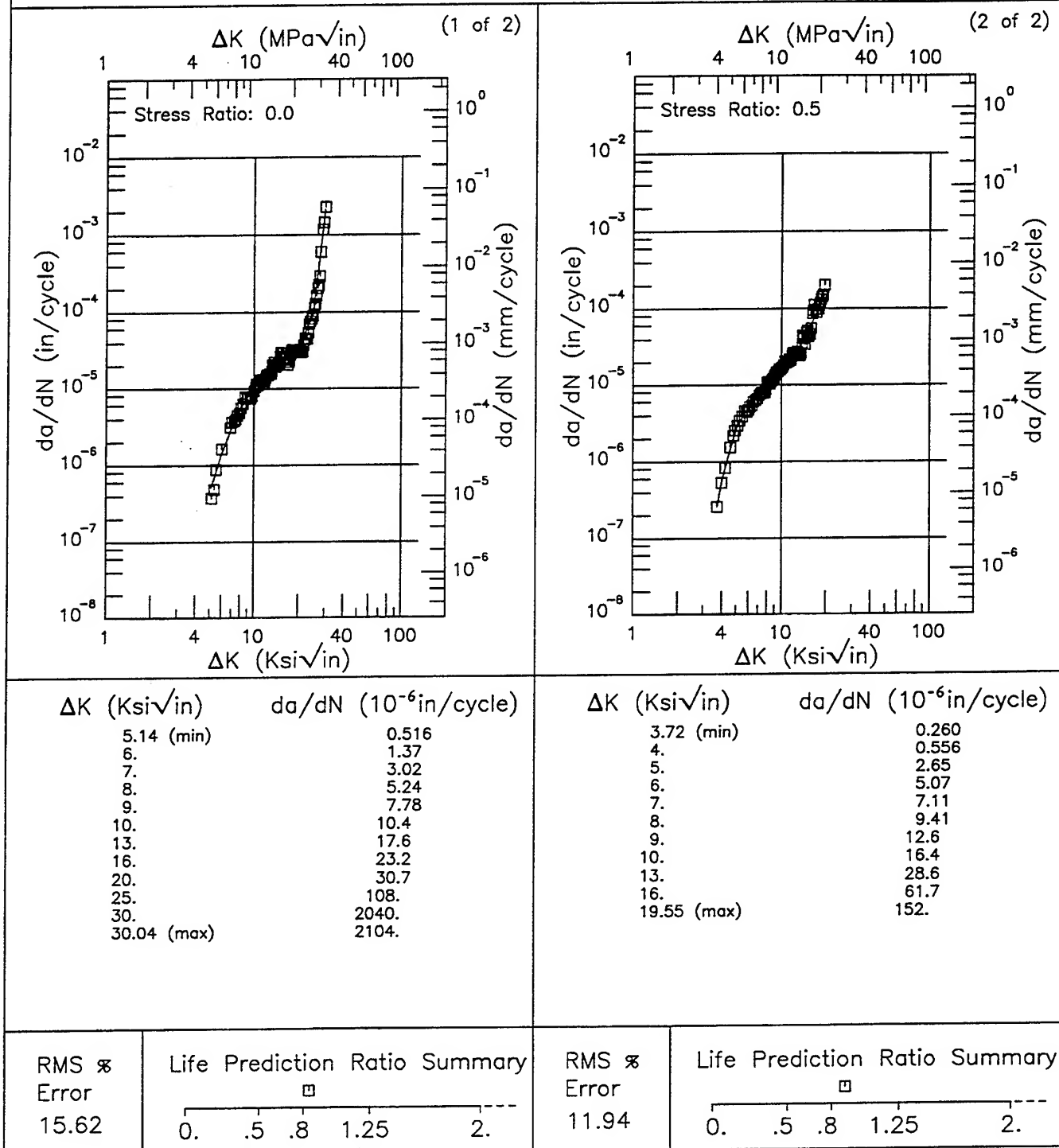


Figure 7.8.3.1.11

Condition/Ht: T8 275F 12HRS
 Form: 0.42 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 53 ksi
 Ult. Strength: 70.8 ksi
 Specimen Thk: 0.253 in.
 Specimen Width: 3.009 in.
 Ref: WL001

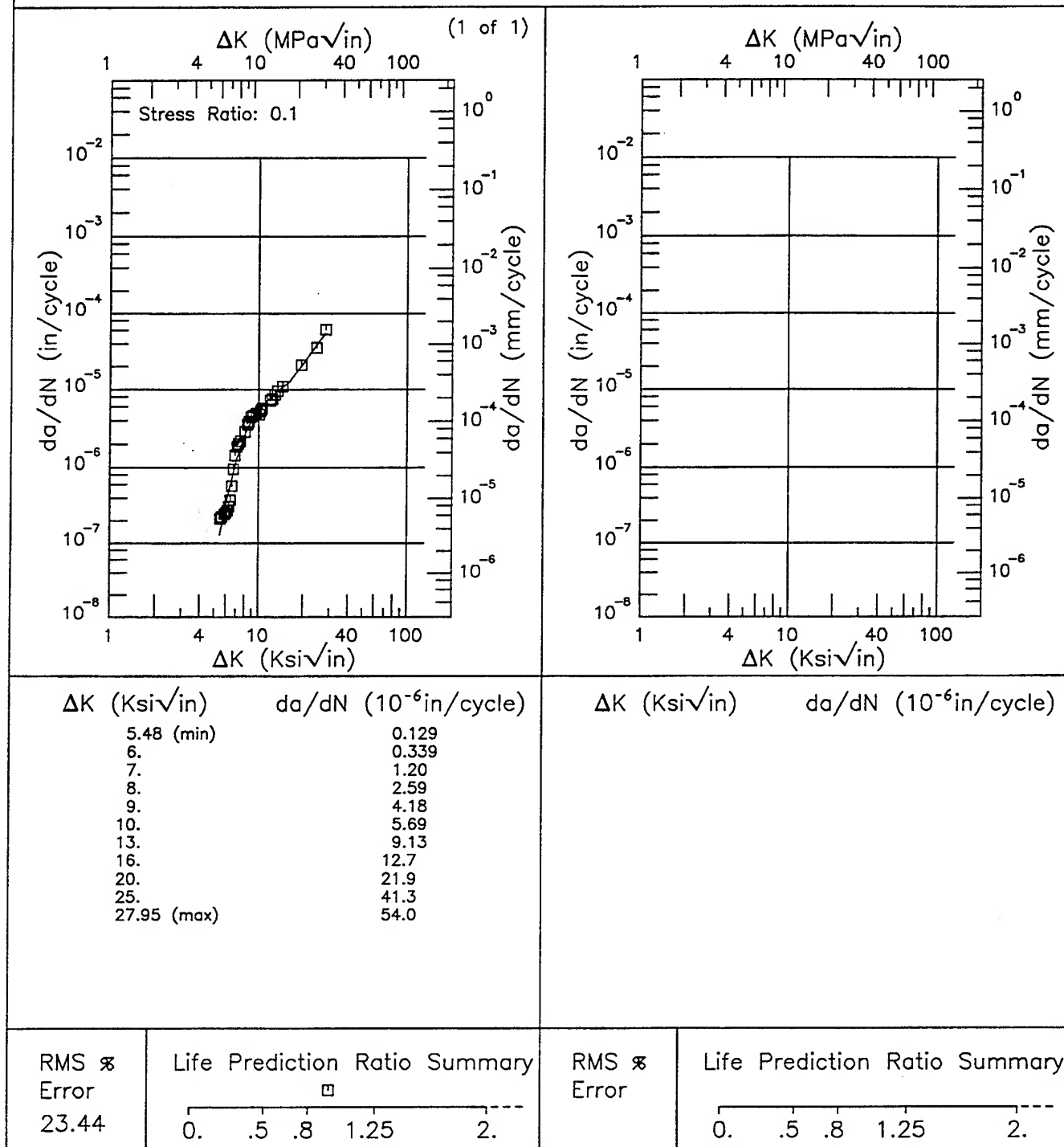
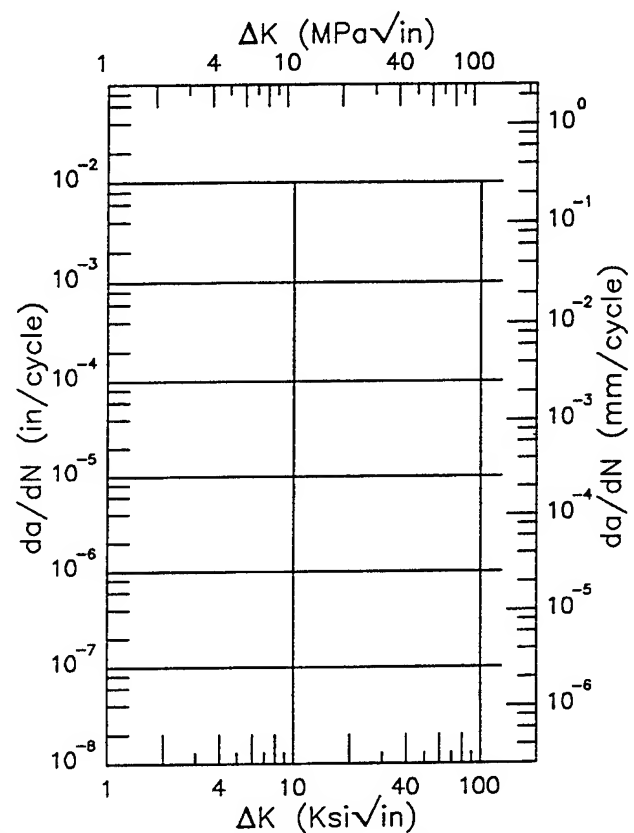
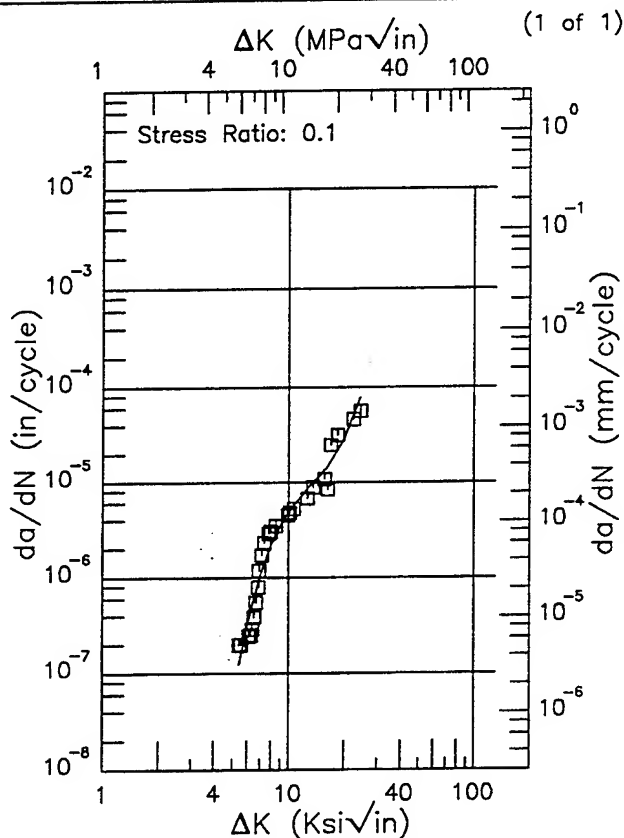


Figure 7.8.3.1.12

R | 2091 |
 Condition/Ht: T8 275F 12HRS
 Form: 0.42 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 60.5 ksi
 Ult. Strength: 71.7 ksi
 Specimen Thk: 0.253 in.
 Specimen Width: 3.009 in.
 Ref: WL001



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.45 (min)	0.123
6.	0.316
7.	1.02
8.	2.15
9.	3.52
10.	4.94
13.	9.08
16.	14.3
20.	28.8
24.33 (max)	78.0

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

RMS %
 Error
 35.25

Life Prediction Ratio Summary
 0. .5 .8 1.25 2. ---

RMS %
 Error

Life Prediction Ratio Summary
 0. .5 .8 1.25 2. ---

Figure 7.8.3.1.13

Condition/Ht: T8 275F 12HRS
 Form: 0.42 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 52.4 ksi
 Ult. Strength: 69.2 ksi
 Specimen Thk: 0.25 - 0.251 in.
 Specimen Width: 3.757 - 3.759 in.
 Ref: WL001

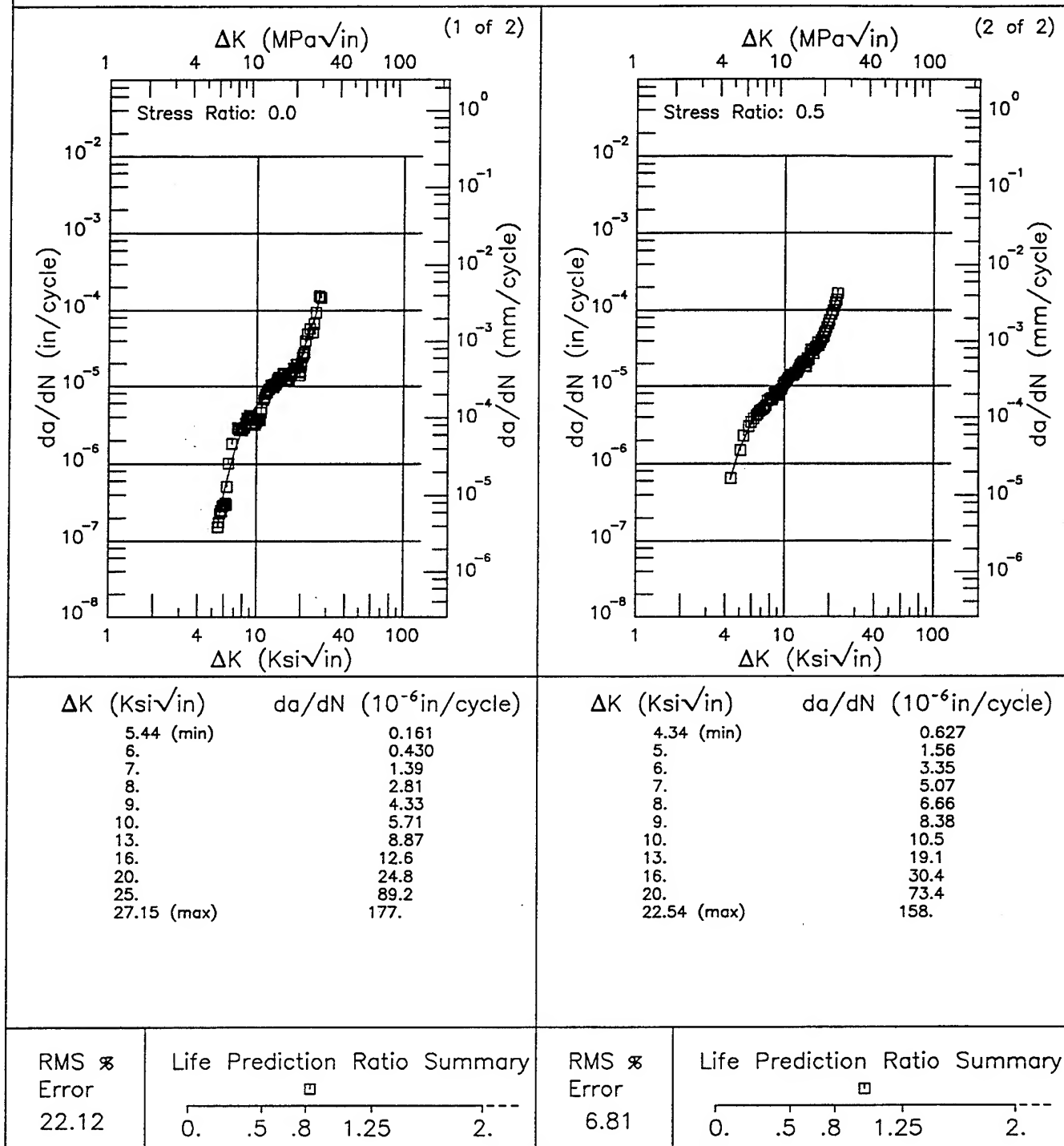


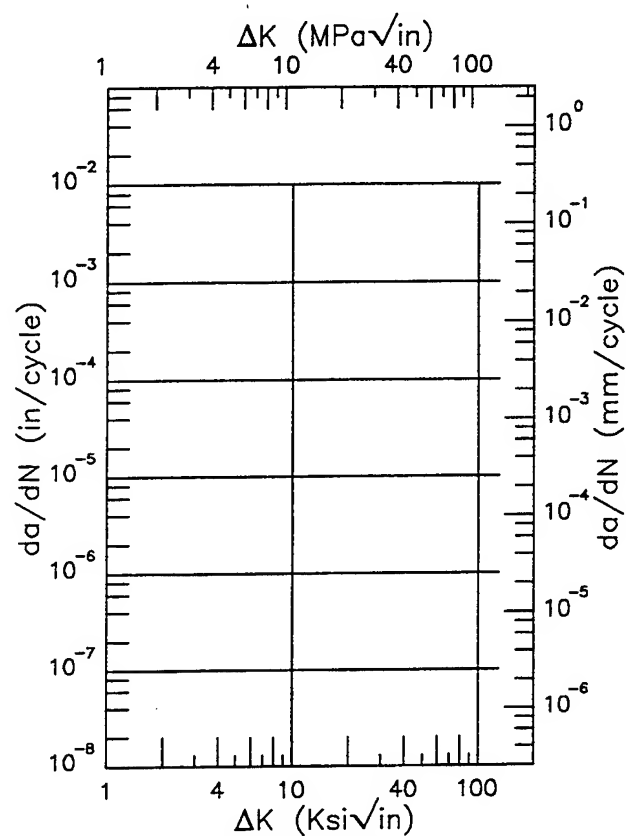
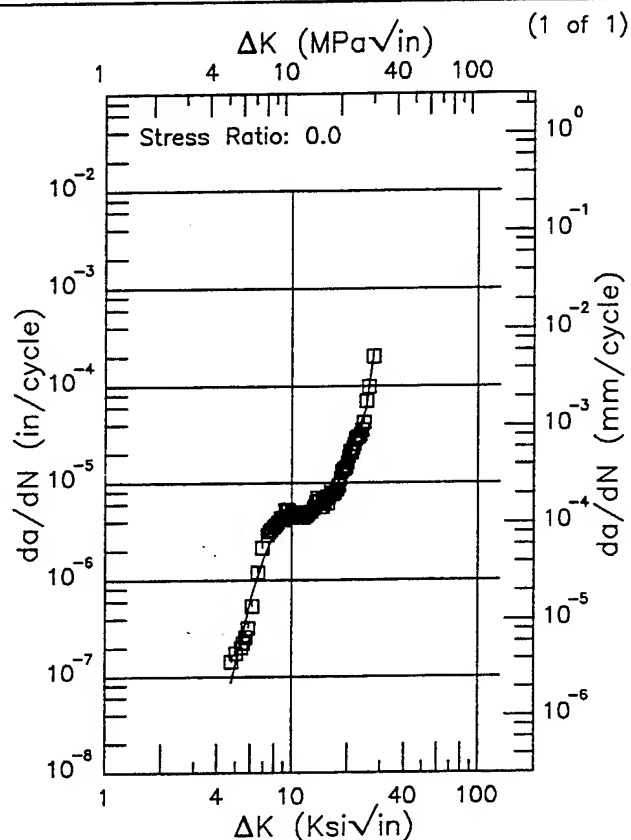
Figure 7.8.3.1.14

R

2091

Condition/Ht: T8 275F 12HRS
 Form: 0.42 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 10 Hz
 Environment: H.H.A.; RT

Yield Strength: 58.3 ksi
 Ult. Strength: 68.8 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 3.754 in.
 Ref: WL001

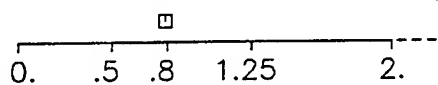


ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.75 (min)	0.0869
5.	0.140
6.	0.618
7.	1.63
8.	3.03
9.	4.39
10.	5.30
13.	5.40
16.	6.71
20.	17.6
25.	58.5
27.25 (max)	220.

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

RMS %
 Error
 16.04

Life Prediction Ratio Summary



RMS %
 Error

Life Prediction Ratio Summary

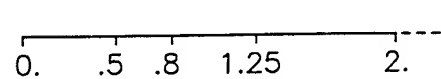


Figure 7.8.3.1.15

Condition/Ht: T8 275F 12HRS
 Form: 0.42 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 12 Hz
 Environment: H.H.A.; RT

Yield Strength: 58.3 ksi
 Ult. Strength: 68.8 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 3.759 in.
 Ref: WL001

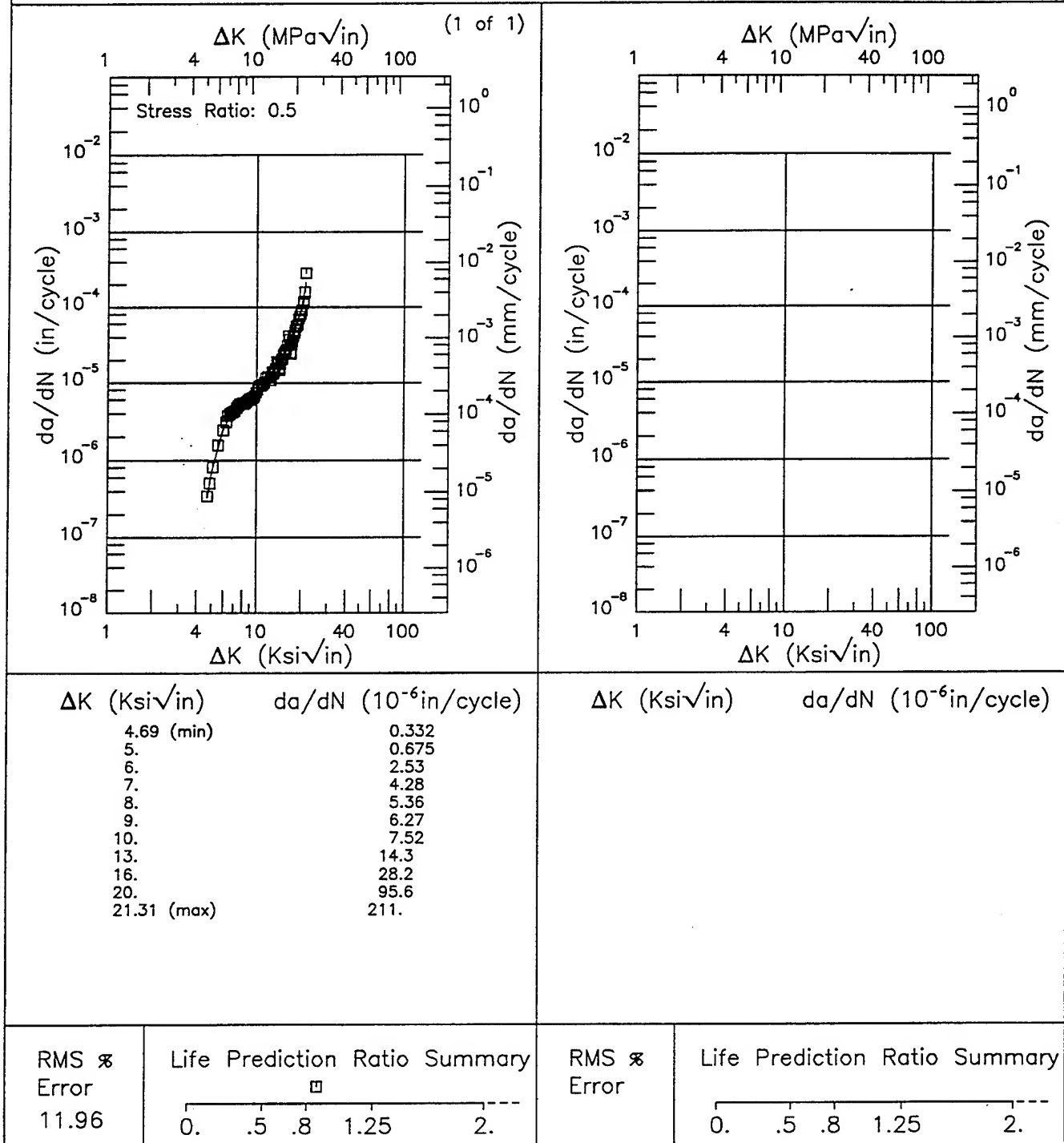


Figure 7.8.3.1.16

R

2091

Condition/Ht: T8 275F 12HRS

Form: 0.42 in. Plate

Specimen Type: CCP (max load specified)

Orientation: L-T45

Frequency: 10 Hz

Environment: H.H.A.; RT

Yield Strength: 45.6 ksi

Ult. Strength: 63.1 ksi

Specimen Thk: 0.24 - 0.25 in.

Specimen Width: 3.753 in.

Ref: WL001

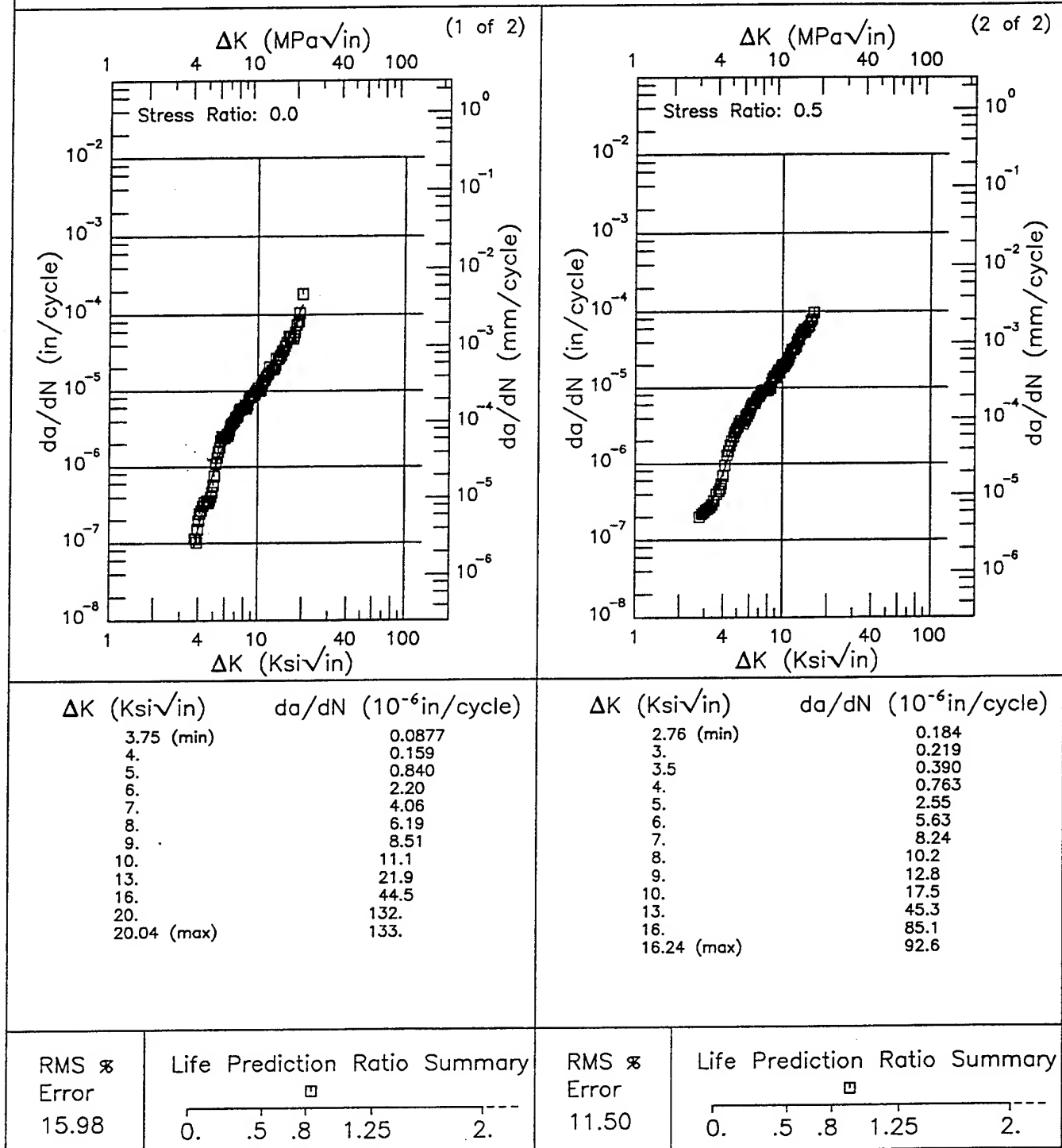


Figure 7.8.3.1.17

Condition/Ht: T81 335F 32HRS
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 5 Hz
 Environment: LAB AIR; RT

Yield Strength: 50.4 ksi
 Ult. Strength: 67.4 ksi
 Specimen Thk: 0.064 in.
 Specimen Width: 5.996 in.
 Ref: WL001

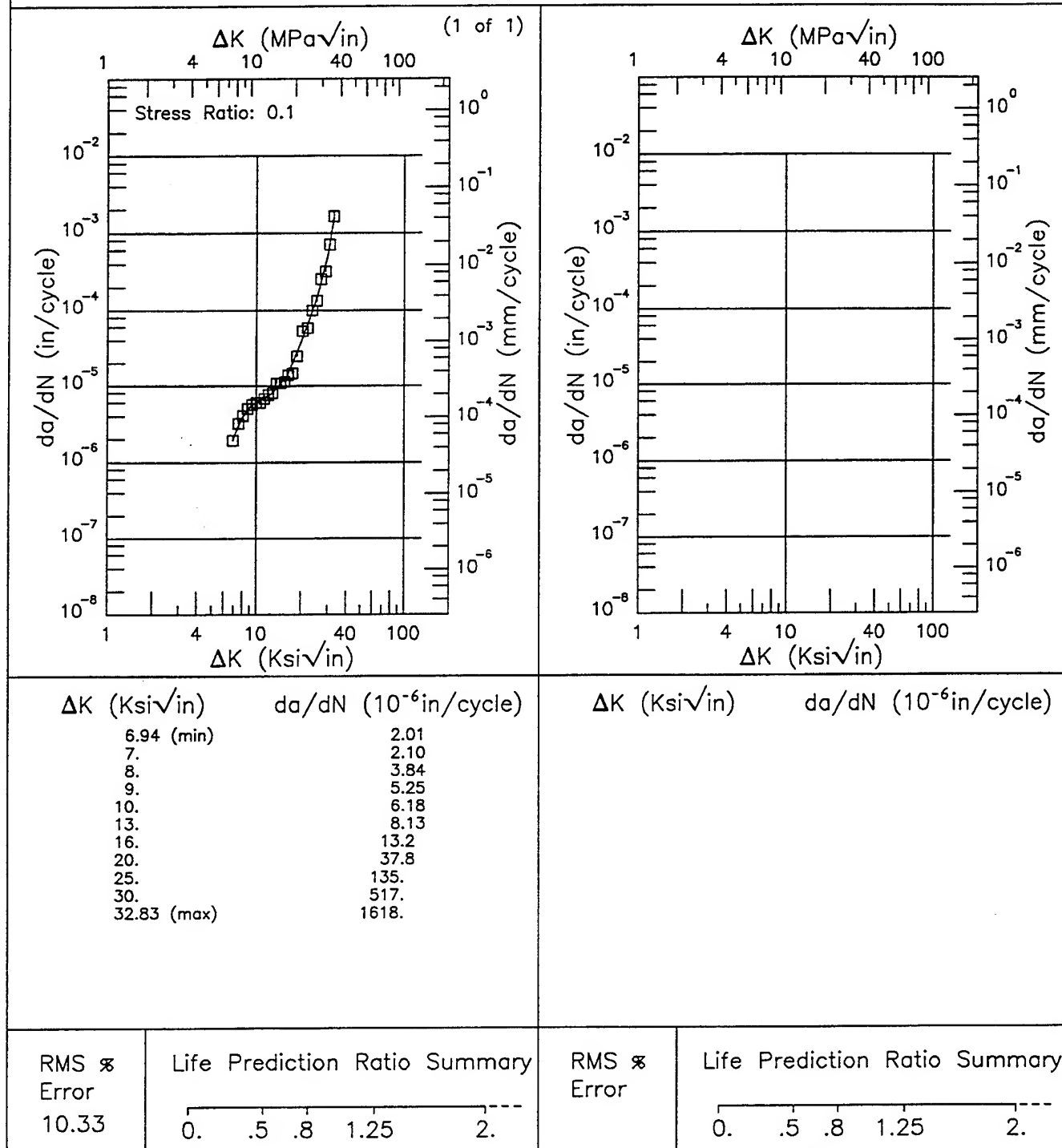


Figure 7.8.3.1.18

R

2091

Condition/Ht: T81 335F 32HRS
 Form: 0.06 in. Sheet
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 5 Hz
 Environment: LAB AIR; RT

Yield Strength: 49.4 ksi
 Ult. Strength: 65.2 ksi
 Specimen Thk: 0.064 in.
 Specimen Width: 5.995 in.
 Ref: WL001

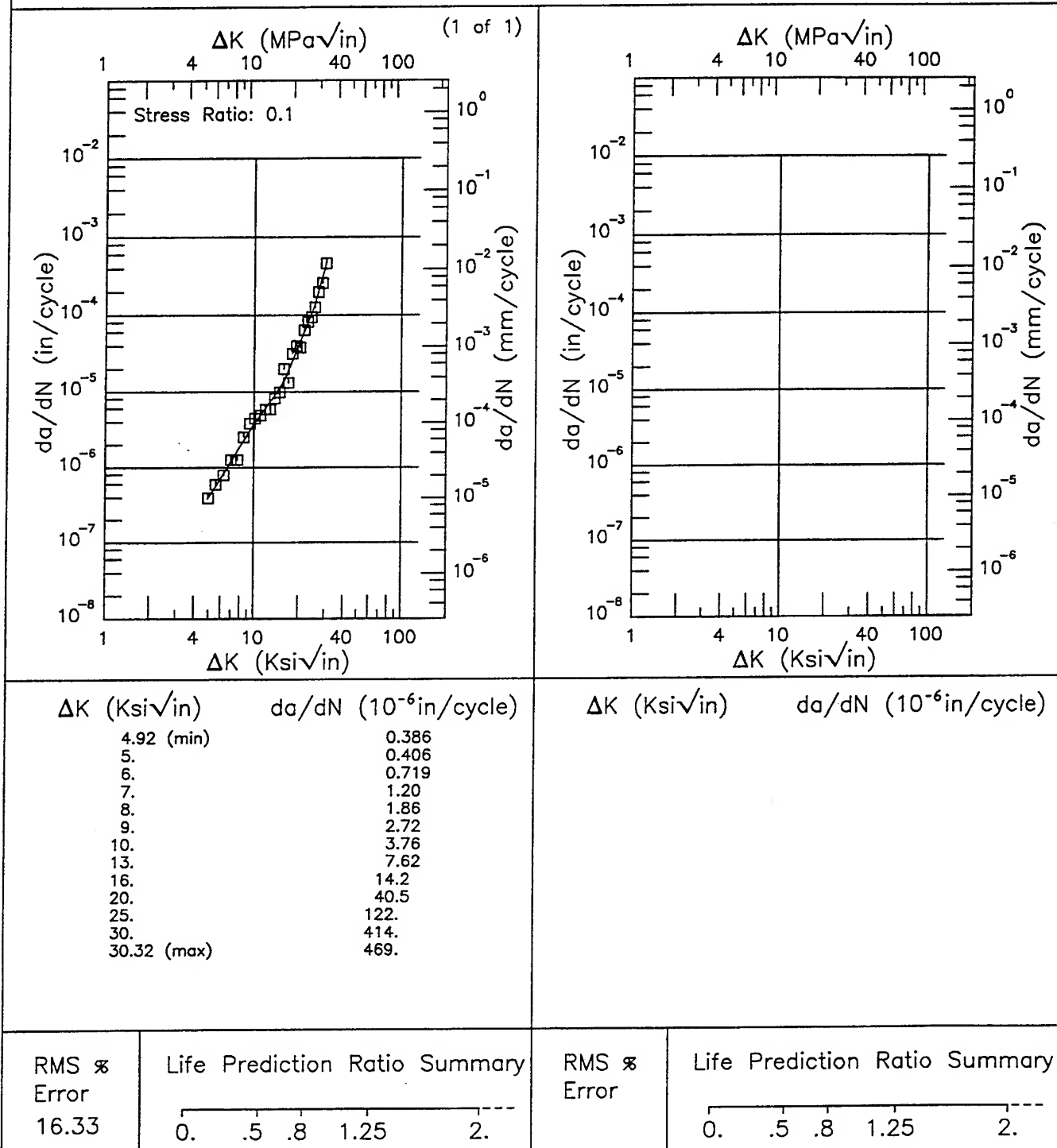


Figure 7.8.3.1.19

Condition/Ht: T851 335F 16HRS
 Form: 0.42 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 5 Hz
 Environment: LAB AIR; RT

Yield Strength: 55.9 ksi
 Ult. Strength: 71.9 ksi
 Specimen Thk: 0.419 in.
 Specimen Width: 2.56 in.
 Ref: WL001

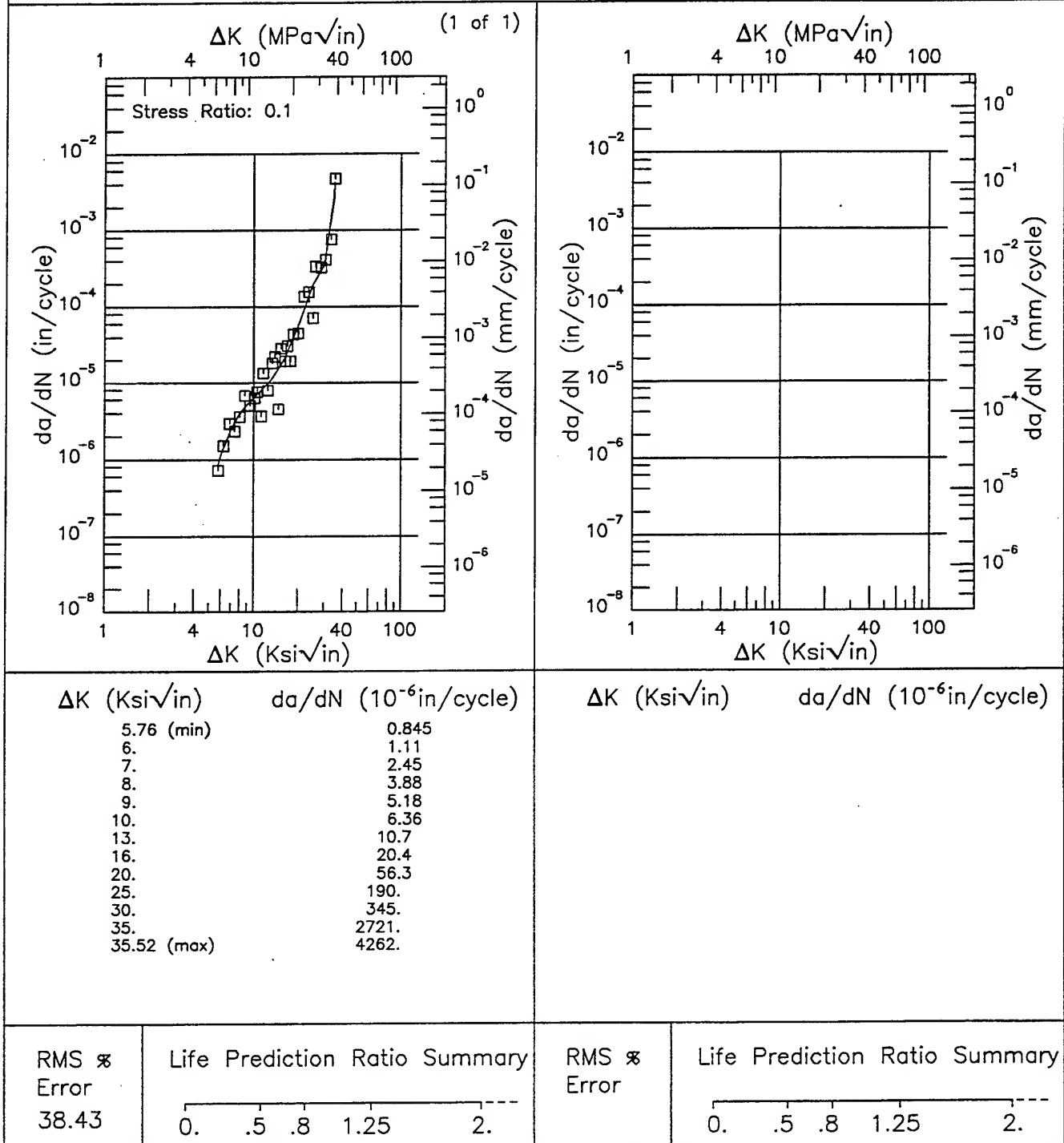


Figure 7.8.3.1.20

R

2091

Condition/Ht: T851 335F 16HRS
 Form: 0.42 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 5 Hz
 Environment: LAB AIR; RT

Yield Strength: 60.7 ksi
 Ult. Strength: 72.7 ksi
 Specimen Thk: 0.419 - 0.42 in.
 Specimen Width: 2.552 - 2.56 in.
 Ref: WL001

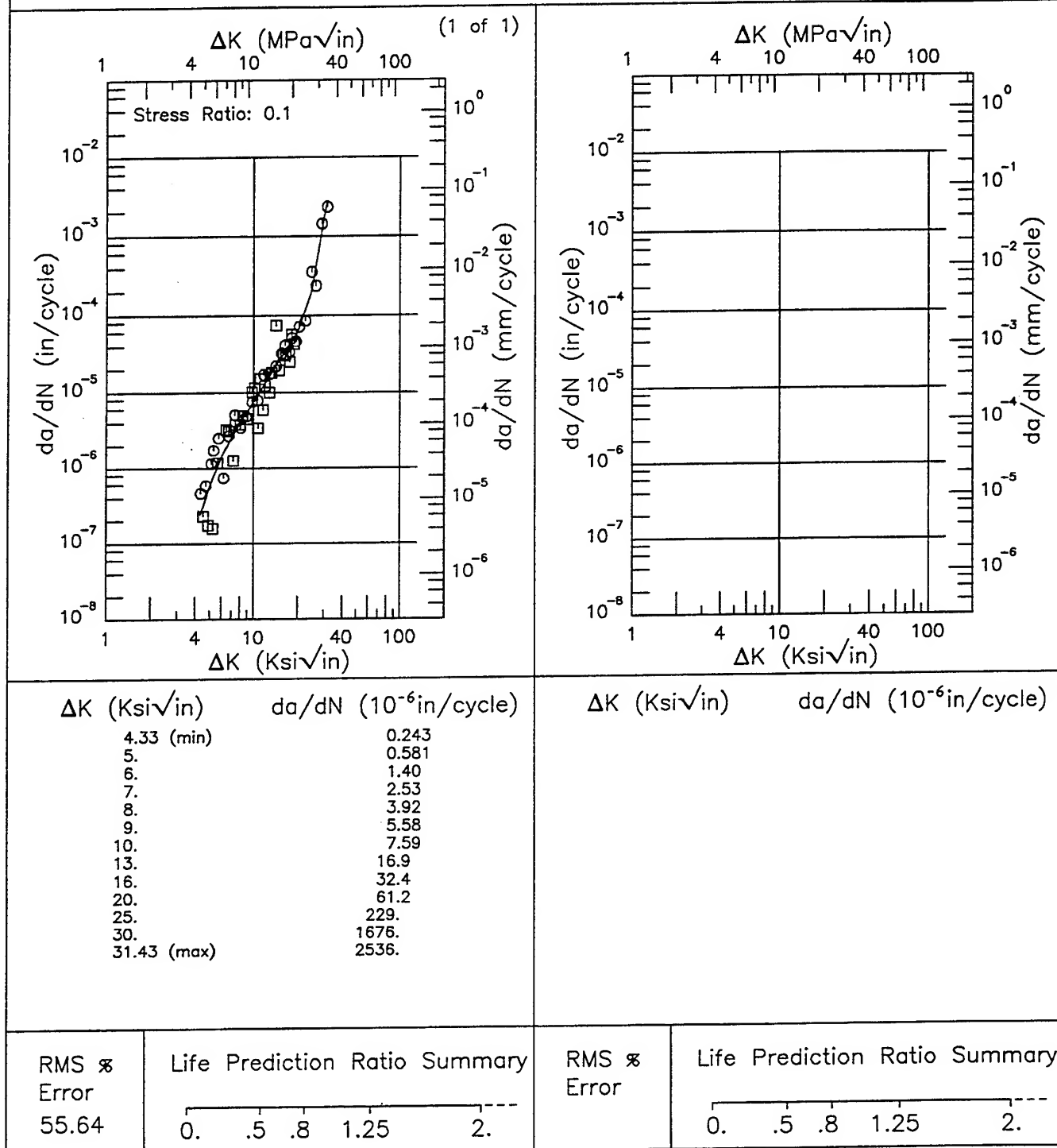


Figure 7.8.3.1.21

TABLE 7.9.1.1

1 of 1

**MEAN PLANE STRAIN FRACTURE TOUGHNESS
FOR ALUMINUM 2000/6000 SERIES ALLOY 2124 AT ROOM TEMPERATURE**

Product Form	Condition/Heat Treatment	K_{Ic} (ksi \sqrt{in})									
		Specimen Orientation									
		L-T			T-L			S-L			
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	
Plate	T851	29.7	2.8	364	25.1	2.3	362	21.7	2.1	393	
	T851 (417)	28.9	2.8	27	23.8	2.4	28	21.3	2.	19	
	T851 (SP)	27.2	4.7	10	23.1	2.7	7	21.4	3.2	10	

TABLE 7.9.1.2.1

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2124 AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: Dry Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	<i>FCGR</i> (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T861	PLATE	0.1	30				54.9		
		0.1	30	0.03	0.31	2.25	47.08		
		0.1	30				39.11		
		0.5	30			6.3			
		0.5	30	0.08	0.62	6.97			
		0.5	30			7.65			

TABLE 7.9.1.2.2

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2124 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: H.H.A

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level ($Ksi\sqrt{in}$)				
				2.5	5.0	10.0	20.0	50.0
T861	PLATE	0.33	25	0.04	1.37	12.01	162.83	100.0

TABLE 7.9.1.2.3

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2124 AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.1	1		0.23	5.87	47.64		
		0.3	1		0.6	8.52	117.68		
		0.5	1		1.08	9.59			

TABLE 7.9.1.2.4

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2124 AT ROOM TEMPERATURE

ORIENTATION: T-L

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.1	1		0.24	5.85	78.67		
		0.1	10-33			5.21			
		0.1	10-33		0.26				
		0.25	6-33	0.04					
		0.25	6-33		0.71	6.03			
		0.5	1		1.2	16.29			
		0.5	8-33	0.13					
		0.5	8-33		1.25	23.92			

TABLE 7.9.1.2.5

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2124 AT ROOM TEMPERATURE**

ORIENTATION: T-L

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.1	1		0.34	7.45			
		0.3	1		0.63	10.27			
		0.6	1		1.09	18.1			

TABLE 7.9.1.2.6

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2124 AT ROOM TEMPERATURE

ORIENTATION: S-L

ENVIRONMENT: Dry Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level (K_{SI}/\sqrt{in})				
				2.6	5.0	10.0	20.0	50.0
T851	PLATE	0.33	18.3			8.55		100.0

TABLE 7.9.1.2.7

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2124 AT ROOM TEMPERATURE**

ORIENTATION: S-L

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level (Ksi \sqrt{in})				
				2.6	6.0	10.0	20.0	50.0
T851	PLATE	0.1	1		0.44	7.82	182.21	
		0.3	1		0.89	11.57		
		0.5	1		1.38	18.52		

TABLE 7.9.1.2.8

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2124 AT ROOM TEMPERATURE

ORIENTATION: S-L

ENVIRONMENT: Salt Fog

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/ $\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.33	18.3			16.86			

TABLE 7.9.2.1

ALUMINUM 2124 K _{1c}																	
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 * (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER		
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV				
T351 (417)	Plate	2.50	82	T-L	44.2	3.990	1.999	CT	2.146	1.82	37.70	---	---	1973	86213		
		2.55			52.8	6.047	2.504	CT	3.084	1.26	37.90			1978	MPC01		
		5.00			55.0	3.000	1.501	CT	1.545	0.95	34.00			1979	GD011		
		5.00			55.0	3.003	1.502	CT	1.632	0.93	33.70			1979	GD011		
		6.00			55.1	2.994	1.499	CT	1.497	1.02	35.30			1978	MPC01		
		5.00			55.2	3.011	1.500	CT	1.596	0.60	27.20			1978	MPC01		
		6.00			55.5	3.006	1.498	CT	1.503	0.70	29.90			1978	MPC01		
		5.50			56.3	3.010	1.498	CT	1.505	1.08	37.20			1978	MPC01		
		6.00			56.5	3.014	1.499	CT	1.567	0.81	32.50			1978	MPC01		
		5.50			56.7	2.999	1.500	CT	1.513	0.64	28.90			1980	RA001		
		5.50			56.8	3.020	1.493	CT	1.480	0.67	29.70			1978	MPC01		
		6.00			56.8	1.998	0.998	CT	1.048	0.57	27.20			1978	RA001		
		5.00		R.T.	56.9	1.986	0.997	CT	1.013	0.65	29.50			1978	MPC01		
		5.12			56.9	3.000	1.498	CT	1.500	0.90	34.30			1978	MPC01		
		6.00			57.1	3.000	1.500	CT	1.550	0.67	29.70			1972	84368		
		6.00			57.1	3.000	1.500	CT	1.520	0.65	29.10			1972	84368		
		5.25			57.2	3.004	1.498	CT	1.502	0.65	29.30			1978	MPC01		
		5.00			57.2	3.029	1.496	CT	1.484	0.84	33.60			1978	MPC01		
		4.90			57.3	3.000	1.498	CT	1.530	0.77	32.00			1978	RA002		
		5.50			57.4	3.010	1.499	CT	1.565	0.78	32.30			1978	MPC01		
		4.50			57.4	3.001	1.499	CT	1.522	0.95	35.40			1980	RA001		
		5.00			57.6	3.000	1.499	CT	1.537	0.62	28.90			1979	RA001		
		5.25			57.7	2.973	1.502	CT	1.516	0.75	32.30			1978	MPC01		
T851	Plate			L-T								28.7	2.8				

TABLE 7.9.2.1 (CONTINUED)

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2124

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.00	R.T. Cont'd	L-T Cont'd	57.7	2.999	1.500	CT	1.499	0.63	29.10	Cont'd	Cont'd	1980	RA001
		5.50			57.8	3.022	1.497	CT	1.481	0.65	29.50			1978	MPC01
		5.00			57.8	2.997	1.497	CT	1.521	0.66	29.90			1979	RA001
		4.62			57.9	2.998	1.500	CT	1.499	0.93	35.50			1978	MPC01
		5.50			58.0	3.010	1.497	CT	1.445	0.60	28.80			1978	MPC01
		5.50			58.1	2.971	1.498	CT	1.456	0.57	28.00			1978	MPC01
		5.25			58.1	3.026	1.500	CT	1.513	0.90	35.20			1978	MPC01
		5.00			58.1	3.000	1.498	CT	1.573	0.74	31.79			1978	RA001
		5.50			58.1	2.984	1.500	CT	1.522	0.84	33.90			1978	MPC01
		4.90			58.1	3.005	1.500	CT	1.498	0.57	27.90			1978	RA002
		4.25			58.2	2.999	1.499	CT	1.551	0.65	29.70			1980	RA001
		5.00			58.2	3.002	1.500	CT	1.551	0.48	25.90			1978	MPC01
		5.50			58.3	2.988	1.499	CT	1.464	0.57	28.40			1978	MPC01
		5.00			58.4	2.980	1.498	CT	1.490	0.67	30.90			1978	MPC01
		3.50			58.7	3.004	1.498	CT	1.502	0.72	31.90			1978	MPC01
		5.00			58.7	1.992	0.998	CT	1.016	0.50	26.80			1978	MPC01
		2.50			58.8	3.000	1.498	CT	1.556	0.60	28.90			1980	RA001
		6.00			58.8	2.000	0.995	CT	0.975	0.97	36.70			1980	RA001
		4.50			58.9	2.982	1.498	CT	1.491	0.75	32.70			1978	MPC01
		6.00			58.9	3.014	1.499	CT	1.537	0.67	30.90			1978	MPC01
		4.50			59.0	3.016	1.499	CT	1.478	0.70	31.60			1978	MPC01
		5.50			59.1	2.986	1.501	CT	1.523	0.57	28.60			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Kcal)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Kcal/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	4.55	R.T. Cont'd	L-T Cont'd	59.1	3.001	1.496	CT	1.517	0.75	32.40	Cont'd	Cont'd	1980	RA001
		5.50			59.1	3.000	1.501	CT	1.530	0.70	31.50			1978	MPC01
		6.00			59.2	2.977	1.495	CT	1.518	0.70	31.80			1978	MPC01
		6.00			59.3	2.986	1.493	CT	1.493	0.55	27.90			1978	MPC01
		4.31			59.3	2.000	1.000	CT	1.000	0.50	26.50			1972	84368
		4.31			59.3	2.000	1.000	CT	0.990	0.52	27.00			1972	84368
		4.00			59.3	3.000	1.499	CT	1.542	0.61	29.50			1978	RA001
		4.90			59.4	2.990	1.368	CT	1.465	0.57	29.00			1978	MPC01
		4.00			59.4	2.000	1.000	CT	1.000	0.61	29.40			1972	84368
		4.00			59.4	2.000	1.000	CT	1.000	0.59	28.90			1972	84368
		4.62			59.5	2.988	1.498	CT	1.464	0.62	30.10			1978	MPC01
		5.25			59.6	3.018	1.501	CT	1.509	0.81	34.50			1978	MPC01
		6.00			59.6	1.998	0.998	CT	1.033	0.73	32.30			1978	RA001
		4.00			59.6	2.999	1.499	CT	1.527	0.62	29.90			1980	RA001
		4.00			59.6	3.002	1.498	CT	1.542	0.88	35.50			1980	RA001
		4.50			59.6	2.997	1.498	CT	1.532	0.79	33.59			1979	RA001
		4.50			59.6	3.012	1.499	CT	1.476	0.70	31.70			1978	MPC01
		1.81			59.7	3.011	1.498	CT	1.626	0.60	29.80			1978	MPC01
		4.50			59.8	3.000	1.500	CT	1.530	0.76	33.10			1972	84368
		4.50			59.8	3.000	1.500	CT	1.510	0.71	31.90			1972	84368
		6.00			59.9	3.004	1.499	CT	1.532	0.70	31.80			1978	MPC01
		4.00			59.9	3.012	1.497	CT	1.566	0.70	32.30			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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2124

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.00	R.T. Cont'd	L-T Cont'd	59.9	3.004	1.499	CT	1.532	0.60	29.80	Cont'd	Cont'd	1978	MPC01
		3.00			59.9	2.994	1.406	CT	1.529	0.66	30.79			1980	RA001
		3.00			59.9	3.001	1.376	CT	1.484	0.60	29.40			1980	RA001
		4.00			60.0	3.000	1.499	CT	1.489	0.62	29.90			1980	RA001
		5.50			60.1	2.996	1.502	CT	1.528	0.57	29.40			1978	MPC01
		5.50			60.1	3.012	1.501	CT	1.506	0.52	27.70			1978	MPC01
		4.50			60.1	3.000	1.495	CT	1.533	0.69	31.60			1978	RA002
		2.50			60.3	3.002	1.102	CT	1.510	0.44	25.50			1980	RA001
		4.50			60.3	3.000	1.499	CT	1.536	0.57	28.79			1978	RA002
		5.00			60.4	2.000	1.001	CT	1.011	0.56	28.79			1978	RA002
		5.50			60.4	3.016	1.500	CT	1.508	0.52	28.00			1978	MPC01
		5.25			60.4	2.994	1.500	CT	1.497	0.75	33.50			1978	MPC01
		5.50			60.4	3.002	1.500	CT	1.531	0.62	30.30			1978	MPC01
		2.50			60.5	3.004	1.499	CT	1.523	0.44	25.40			1980	RA001
		4.50			60.5	2.978	1.500	CT	1.489	0.65	31.00			1978	MPC01
		5.50			60.6	3.004	1.500	CT	1.532	0.52	28.10			1978	MPC01
		3.54			60.6	2.994	1.497	CT	1.587	0.62	30.70			1978	MPC01
		5.50			60.6	3.026	1.500	CT	1.513	0.60	30.20			1978	MPC01
		5.50			60.6	2.998	1.500	CT	1.529	0.48	26.90			1978	MPC01
		2.75			60.6	3.001	1.499	CT	1.591	0.48	26.79			1978	RA002
		3.00			60.6	3.000	1.400	CT	1.526	0.64	30.90			1980	RA001
		5.50			60.8	3.008	1.497	CT	1.534	0.48	27.10			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	3.62	R.T. Cont'd	L-T Cont'd	60.8	3.006	1.496	CT	1.473	0.65	31.40	Cont'd	Cont'd	1978	MPC01
		3.50			60.8	3.004	1.496	CT	1.492	0.42	25.00			1980	RA001
		5.50			60.9	2.980	1.500	CT	1.520	0.48	27.00			1978	MPC01
		4.31			60.9	3.004	1.498	CT	1.592	0.62	28.10			1978	MPC01
		5.00			60.9	3.010	1.500	CT	1.535	0.55	29.10			1978	MPC01
		5.50			60.9	3.028	1.501	CT	1.514	0.70	32.70			1978	MPC01
		4.00			60.9	2.999	1.499	CT	1.544	0.56	28.90			1978	RA001
		6.00			61.0	2.998	1.500	CT	1.559	0.70	32.50			1978	MPC01
		3.50			61.0	3.004	1.499	CT	1.502	0.72	33.00			1978	MPC01
		3.50			61.0	2.982	1.499	CT	1.461	0.70	32.50			1978	MPC01
		5.50			61.1	3.032	1.500	CT	1.516	0.48	26.90			1978	MPC01
		4.25			61.1	1.985	0.998	CT	1.032	0.78	34.60			1978	MPC01
		5.50			61.1	3.000	1.500	CT	1.500	0.53	28.10			1972	84368
		5.50			61.1	3.000	1.500	CT	1.500	0.55	28.80			1972	84368
		4.00			61.1	3.000	1.499	CT	1.571	0.73	33.09			1979	RA001
		4.00			61.2	3.000	1.497	CT	1.586	0.92	37.20			1978	RA001
		4.00			61.2	3.012	1.496	CT	1.536	0.67	31.90			1978	MPC01
		2.70			61.3	2.008	1.000	CT	1.024	0.81	35.50			1978	MPC01
		4.90			61.3	3.002	1.499	CT	1.550	0.50	27.50			1978	RA002
		3.00			61.3	3.002	1.497	CT	1.522	0.65	31.40			1980	RA001
		6.00			61.4	2.980	1.499	CT	1.520	0.70	32.80			1978	MPC01
		2.50			61.4	3.020	1.186	CT	1.540	0.55	29.10			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 * (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.50	R.T. Cont'd	L-T Cont'd	61.4	2.012	0.998	CT	1.006	0.44	26.00	Cont'd	Cont'd	1978	MPC01
		5.50			61.4	3.031	1.500	CT	1.546	0.52	28.80			1978	MPC01
		4.90			61.5	2.976	1.494	CT	1.488	0.48	27.50			1978	MPC01
		4.00			61.5	3.001	1.496	CT	1.610	0.65	31.50			1979	RA001
		3.00			61.5	3.002	1.379	CT	1.551	0.82	35.40			1980	RA001
		5.50			61.6	3.026	1.500	CT	1.513	0.52	28.80			1978	MPC01
		4.00			61.6	2.883	1.499	CT	1.550	0.55	29.20			1978	MPC01
		5.50			61.6	3.018	1.501	CT	1.509	0.42	25.70			1978	MPC01
		5.50			61.6	2.973	1.500	CT	1.516	0.48	27.40			1978	MPC01
		5.00			61.6	2.979	1.501	CT	1.549	0.57	30.00			1978	MPC01
		2.00			61.8	2.994	1.500	CT	1.537	0.59	30.20			1980	RA001
		3.00			61.9	3.000	1.449	CT	1.536	0.63	31.29			1980	RA001
		5.50			61.9	2.994	1.501	CT	1.527	0.52	29.00			1978	MPC01
		2.50			61.9	3.001	1.499	CT	1.513	0.48	27.29			1980	RA001
		4.25			61.9	3.018	1.502	CT	1.539	0.57	29.80			1978	MPC01
		5.50			61.9	2.998	1.501	CT	1.528	0.55	29.10			1978	MPC01
		3.00			61.9	2.980	1.245	CT	1.490	0.65	31.70			1978	MPC01
		5.50			61.9	3.030	1.501	CT	1.515	0.48	27.30			1978	MPC01
		5.00			61.9	3.020	1.502	CT	1.540	0.57	30.00			1978	MPC01
		4.00			62.0	3.008	1.498	CT	1.504	0.78	35.30			1978	MPC01
		5.00			62.0	2.991	1.499	CT	1.585	0.57	30.10			1978	MPC01
		5.50			62.0	3.016	1.501	CT	1.508	0.40	25.40			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.50	R.T. Cont'd	L-T Cont'd	62.0	3.012	1.500	CT	1.506	0.42	25.70	Cont'd	Cont'd	1978	MPC01
		3.50			62.0	3.001	1.490	CT	1.572	0.73	33.59			1979	RA001
		4.00			62.0	3.014	1.493	CT	1.477	0.67	32.70			1978	MPC01
		5.50			62.1	2.992	1.500	CT	1.526	0.46	27.10			1978	MPC01
		5.50			62.1	2.978	1.500	CT	1.519	0.55	29.60			1978	MPC01
		5.25			62.1	2.980	1.500	CT	1.520	0.52	31.30			1978	MPC01
		5.50			62.1	2.978	1.500	CT	1.519	0.50	28.20			1978	MPC01
		4.50			62.1	3.014	1.500	CT	1.507	0.60	30.80			1978	MPC01
		5.50			62.1	3.008	1.500	CT	1.504	0.46	27.20			1978	MPC01
		5.50			62.1	2.986	1.503	CT	1.523	0.57	29.90			1978	MPC01
		4.50			62.1	3.006	1.501	CT	1.503	0.50	30.80			1978	MPC01
		5.50			62.1	2.998	1.500	CT	1.559	0.55	29.30			1978	MPC01
		3.54			62.2	3.030	1.499	CT	1.515	0.65	32.10			1978	MPC01
		4.00			62.2	3.004	1.498	CT	1.562	0.52	29.20			1978	MPC01
		3.00			62.2	2.998	1.300	CT	1.485	0.63	31.29			1978	RA002
		1.75			62.2	3.000	1.495	CT	1.528	0.53	28.79			1980	RA001
		4.50			62.3	3.004	1.501	CT	1.502	0.55	29.90			1978	MPC01
		4.50			62.3	3.004	1.501	CT	1.502	0.67	32.80			1978	MPC01
		5.50			62.3	2.988	1.500	CT	1.524	0.42	25.80			1978	MPC01
		5.50			62.4	3.026	1.500	CT	1.513	0.46	27.30			1978	MPC01
		3.25			62.4	2.990	1.498	CT	1.495	0.72	34.00			1978	MPC01
		2.50			62.5	3.000	1.499	CT	1.600	0.60	30.79			1978	RA002

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	6.00	R.T. Cont'd	L-T Cont'd	62.5	3.010	1.499	CT	1.565	0.72	34.00	Cont'd	Cont'd	1978	MPC01
		4.90			62.5	3.000	1.499	CT	1.603	0.50	28.00			1978	RA002
		5.00			62.6	3.024	1.500	CT	1.542	0.48	28.00			1978	MPC01
		5.50			62.6	3.000	1.500	CT	2.100	0.56	29.70			1978	GD003
		5.50			62.6	3.000	1.500	CT	2.100	0.62	31.20			1978	GD003
		5.50			62.6	2.986	1.500	CT	1.523	0.62	28.80			1978	MPC01
		5.00			62.6	3.016	1.500	CT	1.508	0.44	26.90			1978	MPC01
		4.75			62.6	3.000	1.500	CT	1.546	0.66	32.20			1980	RA001
		5.50			62.6	3.000	1.500	CT	2.100	0.58	30.20			1978	GD003
		3.12			62.7	3.015	1.377	CT	1.447	0.65	32.00			1978	MPC01
		3.12			62.7	3.030	1.498	CT	1.515	0.62	31.60			1978	MPC01
		3.00			62.7	3.002	1.188	CT	1.581	0.51	28.50			1978	RA002
		3.75			62.8	3.029	1.497	CT	1.575	0.52	28.90			1978	MPC01
		4.00			62.8	3.001	1.251	CT	1.525	0.47	27.30			1980	RA001
		5.00			62.9	3.032	1.500	CT	1.516	0.48	28.20			1978	MPC01
		5.00			62.9	2.972	1.500	CT	1.486	0.46	27.20			1978	MPC01
		2.50			62.9	2.000	1.000	CT	---	0.67	32.10			1974	88742
		5.50			62.9	3.024	1.500	CT	1.512	0.48	28.00			1978	MPC01
		3.12			62.9	3.002	1.498	CT	1.514	0.67	32.59			1980	RA001
		4.25			62.9	3.039	1.500	CT	1.550	0.48	27.80			1978	MPC01
		2.50			62.9	2.000	1.000	CT	---	0.74	33.70			1974	88742
		2.50			62.9	2.000	1.000	CT	---	0.67	32.00			1974	88742

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{Ic}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{Ic} /TS) ⁴ (in.)	K _{Ic}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{Ic} (Ksi√in.)	K _{Ic} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	3.12	R.T. Cont'd	L-T Cont'd	63.0	3.025	1.498	CT	1.482	0.62	32.10	Cont'd	Cont'd	1978	MPC01
		4.25			63.0	3.010	1.500	CT	1.535	0.62	29.10			1978	MPC01
		6.00			63.1	3.002	1.499	CT	1.561	0.62	31.70			1978	MPC01
		2.00			63.1	3.006	1.500	CT	1.503	0.48	27.90			1978	MPC01
		2.50			63.1	2.970	1.201	CT	1.574	0.50	28.40			1978	MPC01
		2.00			63.1	3.020	1.499	CT	1.510	0.55	30.20			1978	MPC01
		4.25			63.2	2.977	1.500	CT	1.518	0.46	27.40			1978	MPC01
		4.50			63.2	3.016	1.500	CT	1.508	0.55	30.20			1978	MPC01
		4.50			63.2	2.984	1.500	CT	1.492	0.57	30.50			1978	MPC01
		5.00			63.2	3.008	1.500	CT	1.534	0.60	31.40			1978	MPC01
		4.50			63.2	3.012	1.500	CT	1.506	0.60	31.00			1978	MPC01
		2.00			63.2	3.000	1.497	CT	1.591	0.50	28.50			1978	RA001
		2.75			63.2	3.002	1.483	CT	1.620	0.50	28.28			1980	RA001
		4.50			63.4	3.022	1.499	CT	1.511	0.55	30.30			1978	MPC01
		4.50			63.4	3.000	1.500	CT	1.520	0.44	28.70			1972	84368
		4.50			63.4	3.000	1.500	CT	1.540	0.46	27.20			1972	84368
		1.50			63.4	3.000	1.483	CT	1.568	0.59	30.79			1980	RA001
		4.25			63.5	2.986	1.500	CT	1.523	0.50	29.20			1978	MPC01
		4.00			63.5	3.014	1.499	CT	1.567	0.60	31.60			1978	MPC01
		1.75			63.5	3.004	1.500	CT	1.517	0.53	29.29			1978	RA002
		1.75			63.6	3.001	1.496	CT	1.583	0.52	29.10			1978	RA001
		3.00			63.6	1.998	0.999	CT	1.019	0.43	26.50			1979	RA001

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TT/S) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K _{1c} (in.))	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.75	R.T. Cont'd	L-T Cont'd	63.6	2.999	1.496	CT	1.543	0.54	29.60	Cont'd	Cont'd	1980	RA001
		3.00			63.6	2.986	1.499	CT	1.523	0.55	29.90			1978	MPC01
		3.12			63.6	2.985	1.499	CT	1.582	0.70	33.80			1978	MPC01
		2.50			63.7	3.002	1.499	CT	1.561	0.52	29.70			1978	MPC01
		4.00			63.7	3.019	1.499	CT	1.570	0.42	26.70			1978	MPC01
		2.50			63.7	3.001	1.495	CT	1.607	0.53	29.40			1978	RA002
		2.00			63.8	3.016	1.498	CT	1.508	0.46	27.60			1978	MPC01
		2.50			63.8	3.010	1.498	CT	1.535	0.52	29.40			1978	MPC01
		3.62			63.8	2.995	1.499	CT	1.529	0.49	28.29			1980	RA001
		2.50			63.8	3.000	1.499	CT	1.584	0.56	30.20			1978	RA002
		3.50			63.9	3.000	1.500	CT	1.520	0.61	31.50			1972	84368
		2.95			63.9	3.001	1.500	CT	1.581	0.51	29.00			1978	RA002
		3.00			63.9	3.000	1.397	CT	1.532	0.54	29.90			1980	RA001
		4.25			63.9	3.014	1.501	CT	1.507	0.62	32.50			1978	MPC01
		3.50			63.9	3.000	1.500	CT	1.510	0.61	31.60			1972	84368
		3.00			64.0	2.996	1.400	CT	1.618	0.50	29.40			1978	MPC01
		4.25			64.0	3.020	1.500	CT	1.510	0.62	32.30			1978	MPC01
		3.00			64.0	3.021	1.247	CT	1.450	0.44	27.50			1978	MPC01
		4.90			64.0	3.000	1.499	CT	1.572	0.56	30.29			1978	MPC01
		5.50			64.0	2.977	1.500	CT	1.518	0.46	27.90			1978	MPC01
		3.00			64.1	2.999	1.488	CT	1.574	0.69	33.70			1978	RA001
		2.50			64.1	3.000	1.499	CT	1.623	0.56	30.40			1978	RA002

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.35	R.T. Cont'd	L-T Cont'd	64.1	1.498	0.751	CT	0.790	0.20	18.29	Cont'd	Cont'd	1978	RA002
		3.00			64.2	3.000	1.499	CT	1.548	0.57	30.70			1980	RA001
		4.25			64.2	3.024	1.500	CT	1.512	0.46	27.90			1978	MPC01
		2.00			64.2	2.000	1.002	CT	1.008	0.43	26.79			1978	RA002
		3.50			64.2	2.999	1.499	CT	1.550	0.67	33.40			1978	RA001
		2.25			64.2	2.989	0.999	CT	1.554	0.36	25.00			1978	MPC01
		3.00			64.2	3.002	1.495	CT	1.533	0.40	25.70			1980	RA001
		1.57			64.2	3.000	1.500	CT	1.590	0.46	27.40			1972	84368
		3.62			64.3	2.978	1.499	CT	1.608	0.46	27.80			1978	MPC01
		3.54			64.3	3.014	1.498	CT	1.507	0.48	28.50			1978	MPC01
		2.35			64.3	3.001	1.499	CT	1.627	0.51	29.20			1980	RA001
		4.25			64.4	3.008	1.500	CT	1.634	0.55	30.80			1978	MPC01
		3.00			64.4	2.975	1.300	CT	1.636	0.48	28.60			1978	MPC01
		2.00			64.4	3.016	1.499	CT	1.638	0.50	29.50			1978	MPC01
		4.50			64.4	3.024	1.500	CT	1.512	0.62	32.20			1978	MPC01
		1.12			64.4	3.000	1.140	CT	1.537	0.53	29.79			1980	RA001
		1.50			64.5	2.990	1.493	CT	1.525	0.57	31.60			1978	MPC01
		4.25			64.5	3.008	1.500	CT	1.534	0.50	29.50			1978	MPC01
		2.50			64.5	3.004	1.498	CT	1.546	0.44	27.10			1980	RA001
		2.50			64.5	2.010	0.998	CT	1.005	0.34	24.00			1978	MPC01
		2.50			64.5	2.510	1.249	CT	1.280	0.50	29.40			1978	MPC01
		2.50			64.5	2.999	1.494	CT	1.536	0.39	25.70			1980	RA001

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi)(in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.50	R.T. Cont'd	L-T Cont'd	64.5	2.498	1.250	CT	1.274	0.48	28.50	Cont'd	Cont'd	1978	MPC01
		4.25			64.7	3.026	1.499	CT	1.543	0.60	31.80			1978	MPC01
		2.50			64.7	3.014	1.102	CT	1.567	0.40	26.50			1978	MPC01
		2.75			64.7	3.024	1.500	CT	1.542	0.70	34.80			1978	MPC01
		4.25			64.7	3.028	1.501	CT	1.514	0.62	32.50			1978	MPC01
		3.00			64.8	3.000	1.499	CT	1.558	0.40	26.00			1979	RA001
		2.00			64.8	3.002	1.496	CT	1.554	0.40	26.10			1980	RA001
		2.20			64.8	3.001	1.498	CT	1.554	0.52	29.70			1980	RA001
		2.50			64.9	2.010	1.000	CT	1.005	0.55	30.60			1978	MPC01
		2.50			64.9	2.508	1.250	CT	1.279	0.42	27.20			1978	MPC01
		2.50			64.9	2.486	1.250	CT	1.268	0.42	26.90			1978	MPC01
		3.25			64.9	3.016	1.497	CT	1.508	0.70	34.40			1978	MPC01
		1.81			64.9	2.982	1.493	CT	1.521	0.52	29.90			1978	MPC01
		2.75			64.9	2.997	1.498	CT	1.610	0.60	32.00			1980	RA001
		4.90			65.0	3.000	1.500	CT	1.591	0.49	28.90			1978	RA002
		2.00			65.0	3.017	1.499	CT	1.569	0.57	31.20			1978	MPC01
		0.62			65.1	1.006	0.500	CT	0.503	0.46	28.40			1978	MPC01
		1.50			65.1	3.000	1.479	CT	1.532	0.52	29.90			1980	RA001
		2.00			65.1	3.000	1.496	CT	1.581	0.59	31.79			1980	RA001
		4.00			65.2	3.979	2.000	CT	2.069	0.50	29.40			1978	MPC01
		2.00			65.2	2.008	0.899	CT	1.044	0.44	27.60			1978	MPC01
		2.50			65.2	2.999	1.498	CT	1.555	0.48	28.70			1980	RA001

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K ₁₀															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K ₀₁)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₀₁ /T ₀) ² (in.)	K ₁₀			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K ₁₀ (K ₀₁ /in.)	K ₁₀ MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	1.75	R.T. Cont'd	L-T Cont'd	65.2	2.999	1.500	CT	1.567	0.61	32.30	Cont'd	Cont'd	1980	RA001
		1.57			65.2	3.000	1.500	CT	1.530	0.73	35.20			1972	84368
		3.00			65.2	3.008	1.400	CT	1.594	0.48	28.90			1978	MPC01
		1.57			65.2	3.000	1.500	CT	1.480	0.69	34.20			1972	84368
		3.00			65.2	2.001	0.997	CT	1.012	0.54	30.50			1978	RA002
		2.35			65.2	2.016	1.001	CT	0.988	0.40	26.70			1978	MPC01
		4.00			65.2	4.039	1.997	CT	2.060	0.48	29.10			1978	MPC01
		2.50			65.3	3.000	1.499	CT	1.522	0.45	28.00			1980	RA001
		2.00			65.3	1.994	0.999	CT	1.017	0.42	27.30			1978	MPC01
		2.50			65.4	2.000	1.000	CT	1.010	0.44	27.30			1972	84368
		2.04			65.4	1.500	0.750	CT	0.740	0.27	21.30			1972	84368
		2.50			65.4	2.000	1.000	CT	1.020	0.43	27.10			1972	84368
		1.81			65.4	2.012	0.998	CT	1.046	0.44	27.80			1978	MPC01
		2.00			65.4	3.003	1.501	CT	1.568	0.54	30.40			1978	RA002
		3.50			65.4	3.000	1.500	CT	1.540	0.44	27.90			1972	84368
		2.04			65.4	1.500	0.750	CT	0.750	0.28	21.10			1972	84368
		3.00			65.4	2.975	1.245	CT	1.517	0.55	30.80			1978	MPC01
		2.00			65.4	3.030	1.500	CT	1.515	0.48	29.00			1978	MPC01
		2.50			65.4	2.990	1.498	CT	1.525	0.55	30.90			1978	MPC01
		3.00			65.5	1.997	0.998	CT	1.014	0.59	32.00			1979	RA001
		2.50			65.5	1.998	0.998	CT	0.979	0.50	29.50			1978	MPC01
		4.00			65.5	3.000	1.500	CT	1.580	0.31	23.00			1972	84368

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	4.00	R.T. Cont'd	L-T Cont'd	65.5	3.000	1.500	CT	1.560	0.30	22.50	Cont'd	Cont'd	1972	84368
		2.50			65.6	4.000	2.000	CT	2.100	0.78	36.70			1972	84368
		2.50			65.6	4.000	2.000	CT	2.100	0.77	36.40			1972	84368
		3.00			65.6	3.001	1.478	CT	1.574	0.49	29.20			1978	RA001
		5.50			65.7	3.018	1.500	CT	1.509	0.44	28.10			1978	MPC01
		2.50			65.7	2.983	1.499	CT	1.551	0.42	27.00			1978	MPC01
		1.12			65.7	3.018	1.135	CT	1.479	0.34	24.70			1978	MPC01
		3.00			65.8	3.028	1.400	CT	1.605	0.62	33.10			1978	MPC01
		1.75			65.9	3.003	1.501	CT	1.583	0.60	32.50			1978	RA002
		2.40			65.9	3.003	1.498	CT	1.534	0.49	29.40			1980	RA001
		2.25			66.0	2.016	0.999	CT	1.068	0.38	26.30			1978	MPC01
		1.50			66.0	3.000	1.500	CT	---	0.52	30.00			1982	NC003
		3.00			66.0	2.400	0.755	CT	1.356	0.60	32.40			1972	84306
		1.25			66.0	2.006	0.998	CT	1.083	0.44	28.20			1978	MPC01
		2.50			66.0	3.003	1.187	CT	1.520	0.51	30.10			1978	RA002
		1.50			66.0	3.000	1.500	CT	---	0.52	30.00			1982	NC003
		1.50			66.1	3.001	1.496	CT	1.564	0.54	31.00			1980	RA001
		2.50			66.2	4.000	2.000	CT	2.150	0.65	33.70			1972	84368
		2.50			66.2	4.000	2.000	CT	2.160	0.69	34.90			1972	84368
		2.00			66.2	3.000	1.500	CT	1.550	0.52	30.30			1972	84368
		1.50			66.2	3.018	1.478	CT	1.509	0.50	29.80			1978	MPC01
		1.12			66.2	2.004	1.000	CT	1.022	0.46	28.90			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K ₁₀															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₁₀ TVS) ^a (in.)	K ₁₀			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K ₁₀ (Ksi/in.)	K ₁₀ MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.00	R.T. Cont'd	L-T Cont'd	66.2	3.000	1.500	CT	1.560	0.53	30.40	Cont'd	Cont'd	1972	84368
		1.50			66.2	2.996	1.448	CT	1.528	0.46	29.00			1978	MPC01
		0.87			66.2	1.500	0.750	CT	0.750	0.38	26.30			1978	MPC01
		2.50			66.2	2.999	1.497	CT	1.539	0.45	28.20			1978	RA002
		1.37			66.3	2.013	0.988	CT	1.067	0.34	25.10			1978	MPC01
		2.25			66.3	3.018	1.493	CT	1.539	0.48	29.30			1978	MPC01
		2.50			66.3	1.998	0.999	CT	1.021	0.36	25.50			1979	RA001
		2.00			66.4	4.000	2.000	CT	...	0.54	30.90			1978	UD005
		1.12			66.4	2.982	1.153	CT	1.461	0.34	25.00			1978	MPC01
		2.00			66.4	2.000	0.752	CT	1.014	0.26	21.40			1972	84306
		2.00			66.4	2.000	0.748	CT	1.018	0.34	24.60			1972	84306
		2.00			66.4	4.000	2.000	CT	...	0.51	30.10			1978	UD005
		1.75			66.4	3.003	1.503	CT	1.563	0.52	30.40			1978	RA002
		2.00			66.4	2.000	0.753	CT	1.255	0.35	24.70			1972	84306
		2.50			66.4	1.994	0.999	CT	1.057	0.38	26.10			1978	MPC01
		2.00			66.4	4.000	2.000	CT	...	0.52	30.40			1978	UD005
		1.50			66.5	2.998	1.499	CT	1.541	0.50	29.79			1978	RA001
		2.00			66.5	2.983	1.499	CT	1.581	0.57	32.20			1978	MPC01
		2.75			66.6	3.002	1.503	CT	1.561	0.50	30.00			1978	RA002
		1.12			66.7	3.017	1.185	CT	1.599	0.48	29.80			1978	MPC01
		2.50			66.7	3.024	1.201	CT	1.542	0.42	27.80			1978	MPC01
		0.87			66.7	1.504	0.750	CT	0.752	0.46	28.90			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	1.55	R.T. Cont'd	L-T Cont'd	66.7	3.000	1.497	CT	1.487	0.42	27.50	Cont'd	Cont'd	1980	RA001
		1.62			66.7	3.001	1.501	CT	1.575	0.45	28.60			1978	RA002
		3.00			66.9	3.015	1.495	CT	1.628	0.62	33.50			1978	MPC01
		2.25			66.9	3.015	1.499	CT	1.598	0.48	29.80			1978	MPC01
		1.75			67.0	3.000	1.500	CT	1.580	0.45	28.30			1972	84368
		3.00			67.0	2.993	1.435	CT	1.616	0.67	35.10			1978	MPC01
		1.55			67.0	2.978	1.496	CT	1.489	0.44	28.70			1978	MPC01
		1.50			67.0	3.030	1.441	CT	1.515	0.40	27.30			1978	MPC01
		1.50			67.0	3.012	1.481	CT	1.506	0.40	27.20			1978	MPC01
		1.75			67.0	3.000	1.500	CT	1.570	0.45	28.50			1972	84368
		1.73			67.1	2.999	1.499	CT	1.536	0.48	29.60			1978	RA002
		1.75			67.1	3.011	1.499	CT	1.626	0.42	27.80			1978	MPC01
		1.57			67.2	3.000	1.500	CT	1.560	0.37	26.00			1972	84368
		1.75			67.2	3.003	1.496	CT	1.587	0.48	29.50			1980	RA001
		2.03			67.2	2.982	1.501	CT	1.521	0.55	31.70			1978	MPC01
		2.03			67.2	2.998	1.501	CT	1.529	0.60	33.50			1978	MPC01
		1.57			67.2	3.000	1.500	CT	1.560	0.39	26.50			1972	84368
		1.50			67.2	2.509	1.252	CT	1.282	0.45	28.79			1981	MA002
		1.50			67.2	2.512	1.253	CT	1.298	0.46	29.00			1981	MA002
		1.50			67.6	2.997	1.494	CT	1.525	0.45	28.79			1978	RA001
		1.55			67.7	3.000	1.501	CT	1.575	0.38	26.50			1979	RA001
		2.00			67.7	3.029	1.498	CT	1.545	0.44	28.60			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	1.55	R.T. Cont'd	L-T Cont'd	67.8	1.998	0.999	CT	1.019	0.40	27.70	Cont'd	Cont'd	1978	MPC01
		1.50			67.9	1.985	0.999	CT	1.032	0.42	28.00			1978	MPC01
		1.75			68.0	2.998	1.498	CT	1.589	0.55	32.40			1978	MPC01
		1.37			68.2	2.984	1.376	CT	1.462	0.38	26.90			1978	MPC01
		1.25			68.4	2.017	0.999	CT	1.089	0.38	26.90			1978	MPC01
		1.73			68.4	3.003	1.503	CT	1.611	0.48	30.20			1978	RA002
		1.62			68.8	3.001	1.451	CT	1.522	0.40	27.79			1980	RA001
		1.50			69.1	3.002	1.492	CT	1.528	0.36	26.70			1980	RA001
		1.75			69.5	2.998	1.500	CT	1.559	0.44	29.20			1978	MPC01
		2.52			69.7	2.000	1.000	CT	0.960	0.34	25.50			1972	84368
		2.52			69.7	2.000	1.000	CT	0.960	0.35	26.00			1972	84368
		2.52			69.7	2.000	1.000	CT	0.940	0.33	25.20			1972	84368
T851	Plate	3.00	R.T.	T-L	---	3.014	1.372	CT	1.477	---	28.40	25.1	2.3	1978	MPC01
		5.00			53.0	3.004	1.502	CT	1.533	0.56	25.10			1979	GD011
		6.00			53.9	3.020	1.499	CT	1.510	0.44	23.10			1978	MPC01
		5.50			54.2	2.973	1.497	CT	1.516	0.50	24.80			1978	MPC01
		5.25			54.4	2.998	1.498	CT	1.559	0.50	24.80			1978	MPC01
		6.00			54.6	2.979	1.499	CT	1.579	0.57	26.60			1978	MPC01
		6.00			54.9	3.008	1.499	CT	1.594	0.55	26.00			1978	MPC01
		5.25			54.9	3.012	1.499	CT	1.536	0.42	22.90			1978	MPC01
		6.00			54.9	2.985	1.499	CT	1.552	0.67	28.80			1978	MPC01
		6.00			55.0	3.000	1.500	CT	1.580	0.48	24.10			1972	84368

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	6.00	R.T. Cont'd	T-L Cont'd	55.0	3.000	1.500	CT	1.560	0.46	23.70	Cont'd	Cont'd	1972	84368
		5.50			55.6	3.017	1.498	CT	1.569	0.70	29.90			1978	MPC01
		5.50			55.9	2.999	1.500	CT	1.592	0.50	25.00			1980	RA001
		5.75			56.4	2.001	0.995	CT	1.010	0.60	27.70			1980	RA001
		5.50			56.5	3.008	1.499	CT	1.564	0.55	27.00			1978	MPC01
		6.00			56.7	3.004	1.499	CT	1.622	0.50	26.00			1978	MPC01
		5.50			56.7	3.028	1.500	CT	1.544	0.48	25.10			1978	MPC01
		5.50			56.8	3.010	1.498	CT	1.505	0.57	27.60			1978	MPC01
		6.00			57.0	3.014	1.498	CT	1.537	0.38	22.30			1978	MPC01
		6.00			57.0	2.001	0.998	CT	1.000	0.56	27.20			1980	RA001
		5.00			57.0	3.026	1.500	CT	1.604	0.42	23.90			1978	MPC01
		5.00			57.0	3.010	1.498	CT	1.505	0.44	24.10			1978	MPC01
		6.00			57.1	3.026	1.494	CT	1.513	0.57	27.80			1978	MPC01
		4.90			57.1	3.000	1.498	CT	1.556	0.73	30.90			1978	RA002
		5.12			57.1	3.028	1.499	CT	1.544	0.55	27.20			1978	MPC01
		5.00			57.2	2.996	1.497	CT	1.528	0.60	28.30			1978	MPC01
		5.12			57.3	2.987	1.500	CT	1.583	0.70	30.50			1978	MPC01
		4.62			57.4	2.981	1.500	CT	1.550	0.60	28.50			1978	MPC01
		5.50			57.7	2.994	1.500	CT	1.557	0.44	24.40			1978	MPC01
		5.50			57.7	3.008	1.502	CT	1.564	0.36	22.40			1978	MPC01
		5.00			57.8	2.006	0.998	CT	1.043	0.46	25.30			1978	MPC01
		5.00			57.8	2.998	1.501	CT	1.585	0.51	26.29			1979	RA001

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	4.62	R.T. Cont'd	T-L Cont'd	57.9	3.020	1.499	CT	1.510	0.42	24.20	Cont'd	Cont'd	1978	MPC01
		6.00			57.9	1.998	0.997	CT	1.025	0.47	25.29			1978	RA001
		5.50			58.0	2.986	1.500	CT	1.463	0.48	26.00			1978	MPC01
		4.50			58.0	2.997	1.497	CT	1.548	0.47	25.40			1979	RA001
		5.50			58.1	3.006	1.501	CT	1.533	0.38	22.80			1978	MPC01
		5.50			58.2	2.984	1.498	CT	1.492	0.52	27.00			1978	MPC01
		4.25			58.4	3.000	1.499	CT	1.595	0.48	25.50			1980	RA001
		5.00			58.4	3.001	1.498	CT	1.612	0.44	24.60			1978	RA001
		5.00			58.4	2.996	1.499	CT	1.533	0.40	23.40			1979	RA001
		4.00			58.5	2.999	1.498	CT	1.560	0.43	24.29			1980	RA001
		5.00			58.5	3.020	1.498	CT	1.540	0.40	23.50			1978	MPC01
		4.50			58.5	3.000	1.500	CT	1.570	0.51	28.50			1972	84368
		5.00			58.6	2.972	1.499	CT	1.605	0.44	24.80			1978	MPC01
		5.50			58.6	2.996	1.501	CT	1.528	0.44	25.10			1978	MPC01
		5.25			58.6	3.018	1.499	CT	1.509	0.52	27.20			1978	MPC01
		4.00			58.7	1.998	0.998	CT	1.005	0.36	22.50			1979	RA001
		5.50			58.7	2.982	1.500	CT	1.521	0.44	25.20			1978	MPC01
		5.50			58.8	3.031	1.500	CT	1.546	0.36	22.70			1978	MPC01
		5.50			58.8	3.008	1.500	CT	1.534	0.30	21.00			1978	MPC01
		4.90			58.9	3.000	1.499	CT	1.523	0.40	23.79			1978	RA002
		4.55			58.9	3.001	1.500	CT	1.563	0.57	28.20			1980	RA001
		4.00			58.9	3.006	1.492	CT	1.533	0.48	26.40			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TVS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T861 Cont'd	Plate Cont'd	4.00	R.T. Cont'd	T-L Cont'd	58.9	2.998	1.496	CT	1.589	0.38	23.00	Cont'd	Cont'd	1978	MPC01
		6.00			59.0	2.987	1.500	CT	1.553	0.62	29.50			1978	MPC01
		5.50			59.0	2.977	1.501	CT	1.548	0.48	26.50			1978	MPC01
		4.00			59.0	3.012	1.501	CT	1.566	0.42	24.50			1978	MPC01
		4.90			59.1	3.006	1.493	CT	1.503	0.44	25.30			1978	MPC01
		4.00			59.1	3.003	1.498	CT	1.604	0.56	28.10			1980	RA001
		4.90			59.1	3.000	1.499	CT	1.613	0.47	25.79			1978	RA002
		4.50			59.1	2.994	1.498	CT	1.587	0.55	28.20			1978	MPC01
		5.50			59.1	3.006	1.500	CT	1.533	0.40	23.70			1978	MPC01
		5.50			59.2	3.028	1.500	CT	1.544	0.36	22.80			1978	MPC01
		5.50			59.2	2.983	1.497	CT	1.551	0.30	21.00			1978	MPC01
		4.50			59.2	2.987	1.498	CT	1.553	0.38	23.20			1978	MPC01
		4.50			59.2	3.017	1.498	CT	1.599	0.55	28.20			1978	MPC01
		4.00			59.2	3.004	1.499	CT	1.562	0.34	22.40			1978	MPC01
		6.00			59.3	2.976	1.500	CT	1.577	0.60	28.60			1978	MPC01
		5.50			59.3	3.000	1.500	CT	1.510	0.34	21.80			1972	84368
		5.50			59.3	3.000	1.500	CT	1.540	0.35	22.30			1972	84368
		4.50			59.4	3.001	1.501	CT	1.583	0.36	22.79			1978	RA002
		5.50			59.6	3.016	1.499	CT	1.638	0.30	20.90			1978	MPC01
		5.50			59.6	3.016	1.500	CT	1.638	0.32	21.50			1978	MPC01
		5.50			59.6	3.008	1.502	CT	1.534	0.32	21.90			1978	MPC01
		5.00			59.7	2.000	1.001	CT	1.045	0.37	23.20			1978	RA002

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K ₁₀															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 * (K ₁₀ TYS) ^a (in.)	K ₁₀			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K ₁₀ (Ksi√in.)	K ₁₀ MEAN	STAN DEV		
7851 Cont'd	Plate Cont'd	5.50	R.T. Cont'd	T-L Cont'd	59.8	3.018	1.500	CT	1.539	0.40	24.20	Cont'd	Cont'd	1978	MPC01
		5.00			59.8	3.025	1.500	CT	1.543	0.38	23.50			1978	MPC01
		5.50			59.8	2.995	1.500	CT	1.558	0.40	24.10			1978	MPC01
		4.00			59.9	2.999	1.499	CT	1.570	0.38	23.40			1980	RA001
		4.90			59.9	3.003	1.500	CT	1.572	0.42	24.60			1978	RA002
		6.00			59.9	3.012	1.499	CT	1.566	0.65	30.60			1978	MPC01
		4.00			60.0	2.000	1.000	CT	1.030	0.38	23.40			1972	84368
		4.50			60.0	3.000	1.500	CT	1.500	0.57	28.80			1978	MPC01
		4.50			60.0	3.000	1.496	CT	1.604	0.41	24.29			1978	RA002
		5.00			60.1	3.000	1.501	CT	1.530	0.38	23.80			1978	MPC01
		5.50			60.1	2.994	1.501	CT	1.557	0.34	22.50			1978	MPC01
		4.00			60.1	2.999	1.500	CT	1.493	0.54	28.10			1980	RA001
		5.50			60.1	2.992	1.500	CT	1.526	0.40	24.30			1978	MPC01
		5.50			60.1	3.002	1.500	CT	1.530	0.30	21.50			1978	MPC01
		5.50			60.1	2.994	1.501	CT	1.527	0.32	22.10			1978	MPC01
		5.25			60.1	3.026	1.500	CT	1.513	0.44	25.30			1978	MPC01
		5.50			60.2	2.988	1.500	CT	1.524	0.36	22.90			1978	MPC01
		4.00			60.2	3.000	1.497	CT	1.636	0.41	24.40			1978	RA001
		4.25			60.3	1.981	0.997	CT	1.030	0.46	26.40			1978	MPC01
		4.00			60.3	3.020	1.498	CT	1.540	0.50	27.20			1978	MPC01
		5.50			60.4	2.978	1.500	CT	1.519	0.38	23.60			1978	MPC01
		3.50			60.4	3.016	1.497	CT	1.478	0.46	26.50			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.50	R.T. Cont'd	T-L Cont'd	60.4	3.000	1.500	CT	1.500	0.36	23.30	Cont'd	Cont'd	1978	MPC01
		5.00			60.4	3.214	1.499	CT	1.539	0.36	23.40			1978	MPC01
		4.00			60.4	2.998	1.373	CT	1.588	0.51	27.40			1978	RA001
		1.81			60.6	3.002	1.498	CT	1.651	0.44	26.70			1978	MPC01
		5.50			60.6	2.998	1.500	CT	1.529	0.28	21.20			1978	MPC01
		5.25			60.6	3.018	1.500	CT	1.639	0.50	27.70			1978	MPC01
		5.50			60.6	3.018	1.500	CT	1.539	0.32	22.20			1978	MPC01
		3.75			60.6	2.996	1.497	CT	1.528	0.48	27.00			1978	MPC01
		5.50			60.6	3.014	1.500	CT	1.637	0.36	23.50			1978	MPC01
		5.50			60.6	2.996	1.500	CT	1.528	0.34	23.00			1978	MPC01
		4.50			60.7	3.020	1.501	CT	1.610	0.46	26.70			1978	MPC01
		4.31			60.8	2.000	1.000	CT	1.000	0.38	23.60			1972	84368
		4.31			60.8	2.000	1.000	CT	0.990	0.39	23.90			1972	84368
		5.00			60.9	2.988	1.500	CT	1.624	0.30	21.90			1978	MPC01
		4.00			60.9	2.998	1.499	CT	1.608	0.43	25.29			1979	RA001
		3.00			60.9	3.002	1.498	CT	1.567	0.57	29.29			1980	RA001
		3.00			61.0	3.001	1.418	CT	1.555	0.54	28.50			1980	RA001
		5.00			61.0	3.020	1.501	CT	1.631	0.46	26.60			1978	MPC01
		3.00			61.1	2.999	1.498	CT	1.546	0.46	26.29			1980	RA001
		5.50			61.1	3.004	1.490	CT	1.532	0.32	22.00			1978	MPC01
		4.00			61.1	3.000	1.498	CT	1.562	0.59	29.70			1978	RA001
		5.25			61.1	2.985	1.500	CT	1.552	0.42	25.50			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	6.00			61.1	3.008	1.499	CT	1.594	0.67	31.80	Cont'd	Cont'd	1978	MPC01
		5.50		61.1	2.988	1.501	CT	1.524	0.32	22.50	1978			MPC01	
		4.25		61.1	3.020	1.500	CT	1.540	0.34	22.70	1978			MPC01	
		1.75		61.3	2.999	1.499	CT	1.563	0.40	24.70	1980			RA001	
		4.90		61.3	3.000	1.499	CT	1.625	0.44	25.79	1978			RA002	
		5.50		61.4	3.010	1.500	CT	1.535	0.32	22.30	1978			MPC01	
		4.50		61.4	3.000	1.500	CT	1.570	0.36	23.30	1972			84368	
		4.50		61.4	3.000	1.500	CT	1.520	0.34	22.50	1972			84368	
		5.00		61.4	3.028	1.500	CT	1.544	0.32	22.30	1978			MPC01	
		5.50		61.4	3.006	1.500	CT	1.533	0.28	21.30	1978			MPC01	
		4.50		61.4	3.014	1.500	CT	1.507	0.50	27.90	1978			MPC01	
		4.00		61.4	3.000	1.497	CT	1.657	0.50	27.70	1979			RA001	
		4.50		61.4	3.020	1.500	CT	1.510	0.50	27.70	1978			MPC01	
		4.50		61.4	3.030	1.500	CT	1.515	0.52	28.60	1978			MPC01	
		3.00		61.4	3.001	1.438	CT	1.613	0.42	25.40	1978			RA001	
		3.50		61.5	3.000	1.497	CT	1.602	0.55	29.00	1978			RA001	
		5.00		61.5	3.000	1.499	CT	1.547	0.37	23.70	1980			RA001	
		4.31		61.5	3.022	1.502	CT	1.632	0.42	25.50	1978			MPC01	
		3.50		61.6	3.006	1.499	CT	1.533	0.50	28.30	1978			MPC01	
		3.50		61.6	2.990	1.497	CT	1.555	0.52	28.40	1978			MPC01	
		4.25		61.6	2.990	1.500	CT	1.525	0.32	22.30	1978			MPC01	
		4.90		61.6	3.030	1.494	CT	1.515	0.38	24.30	1978			MPC01	

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.50	R.T. Cont'd	T-L Cont'd	61.6	3.029	1.500	CT	1.545	0.32	22.60	Cont'd	Cont'd	1978	MPC01
		2.25			61.6	2.994	1.502	CT	1.587	0.52	23.80			1978	MPC01
		3.00			61.7	2.994	1.404	CT	1.556	0.51	23.10			1980	RA001
		2.70			61.7	2.017	0.999	CT	1.049	0.55	29.30			1978	MPC01
		3.00			61.7	1.998	0.997	CT	1.031	0.37	24.00			1979	RA001
		5.00			61.7	3.004	1.500	CT	1.562	0.34	23.00			1978	MPC01
		4.00			61.7	2.994	1.499	CT	1.587	0.38	24.40			1978	MPC01
		2.50			61.8	3.000	1.499	CT	1.647	0.42	25.60			1978	RA001
		3.00			61.8	3.002	1.374	CT	1.505	0.37	23.79			1980	RA001
		2.50			61.8	2.994	1.056	CT	1.557	0.38	24.50			1978	MPC01
		5.50			61.9	3.000	1.500	CT	2.100	0.43	25.70			1978	GD003
		5.50			61.9	3.000	1.500	CT	2.100	0.43	25.70			1978	GD003
		2.50			61.9	3.000	1.499	CT	1.561	0.43	25.79			1978	RA002
		4.25			61.9	3.002	1.500	CT	1.531	0.28	21.60			1978	MPC01
		5.50			61.9	3.000	1.500	CT	2.100	0.44	26.00			1978	GD003
		4.25			61.9	3.026	1.502	CT	1.543	0.32	22.90			1978	MPC01
		3.12			61.9	3.022	1.499	CT	1.511	0.50	27.90			1978	MPC01
		3.62			62.0	2.995	1.498	CT	1.544	0.34	22.90			1980	RA001
		2.00			62.0	2.994	1.499	CT	1.597	0.53	23.70			1980	RA001
		2.50			62.1	2.000	1.000	CT	...	0.52	23.20			1974	88742
		4.50			62.1	3.002	1.498	CT	1.600	0.48	27.40			1980	RA001
		2.50			62.1	2.000	1.000	CT	...	0.47	26.70			1974	88742

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.00	R.T. Cont'd	T-L Cont'd	62.1	2.002	1.002	CT	1.062	0.32	22.29	Cont'd	Cont'd	1978	RA002
		4.50			62.1	2.994	1.501	CT	1.527	0.50	28.30			1978	MPC01
		4.25			62.1	2.978	1.500	CT	1.519	0.36	24.00			1978	MPC01
		4.50			62.1	3.006	1.500	CT	1.533	0.50	28.20			1978	MPC01
		4.50			62.1	3.006	1.500	CT	1.503	0.55	29.40			1978	MPC01
		4.90			62.1	3.000	1.500	CT	1.617	0.40	25.10			1978	RA002
		2.50			62.1	2.000	1.000	CT	...	0.47	26.90			1974	88742
		4.50			62.1	3.016	1.500	CT	1.508	0.50	28.10			1978	MPC01
		2.50			62.2	3.021	0.869	CT	1.420	0.40	25.40			1978	MPC01
		2.50			62.3	2.989	1.498	CT	1.584	0.36	24.10			1978	MPC01
		1.73			62.3	1.992	1.000	CT	1.016	0.36	24.10			1978	MPC01
		3.50			62.3	3.001	1.500	CT	1.581	0.45	26.60			1979	RA001
		2.50			62.3	2.000	0.997	CT	1.040	0.30	21.90			1978	MPC01
		3.00			62.3	3.002	1.375	CT	1.551	0.61	31.00			1980	RA001
		5.50			62.4	2.988	1.499	CT	1.524	0.48	27.70			1978	MPC01
		1.50			62.4	3.000	1.484	CT	1.556	0.42	25.60			1980	RA001
		4.25			62.4	3.020	1.500	CT	1.540	0.34	23.10			1978	MPC01
		2.50			62.4	2.964	1.500	CT	1.526	0.42	25.70			1980	RA001
		3.12			62.4	3.003	1.498	CT	1.565	0.50	28.10			1980	RA001
		4.00			62.4	3.002	1.251	CT	1.644	0.33	22.70			1980	RA001
		3.00			62.4	3.008	1.482	CT	1.504	0.42	26.10			1978	MPC01
		4.25			62.5	2.986	1.500	CT	1.523	0.34	23.30			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K ₁₀															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (KSI)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₁₀ /TYS) (in.)	K ₁₀			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K ₁₀ (K ₁₀ /in.)	K ₁₀ MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	3.00	R.T. Cont'd	T-L Cont'd	62.5	2.999	1.363	CT	1.568	0.35	23.60	Cont'd	Cont'd	1980	RA001
		3.00			62.5	3.001	1.187	CT	1.641	0.39	25.00			1978	RA002
		2.75			62.5	3.000	1.496	CT	1.648	0.35	23.40			1978	RA002
		3.00			62.6	2.999	1.301	CT	1.515	0.43	26.20			1978	RA002
		4.50			62.6	3.012	1.501	CT	1.506	0.44	26.80			1978	MPC01
		2.50			62.6	3.000	1.499	CT	1.592	0.41	25.60			1978	RA002
		3.50			62.6	3.000	1.498	CT	1.559	0.35	23.60			1980	RA001
		4.00			62.7	3.002	1.498	CT	1.591	0.46	27.20			1978	MPC01
		3.12			62.7	3.000	1.498	CT	1.594	0.54	29.40			1978	RA001
		3.50			62.7	3.000	1.500	CT	1.550	0.46	26.80			1972	84368
		4.00			62.7	3.019	1.500	CT	1.630	0.42	26.10			1978	MPC01
		3.50			62.7	3.000	1.500	CT	1.550	0.44	26.40			1972	84368
		3.00			62.8	3.000	1.498	CT	1.505	0.32	22.60			1980	RA001
		3.00			62.8	3.014	1.301	CT	1.567	0.46	27.20			1978	MPC01
		4.25			62.8	2.977	1.500	CT	1.518	0.34	23.40			1978	MPC01
		5.00			62.9	2.981	1.500	CT	1.550	0.38	24.70			1978	MPC01
		4.25			62.9	2.990	1.500	CT	1.525	0.28	21.80			1978	MPC01
		4.25			62.9	3.014	1.500	CT	1.537	0.36	24.00			1978	MPC01
		2.00			62.9	3.016	1.497	CT	1.508	0.40	25.30			1978	MPC01
		3.12			62.9	2.980	1.448	CT	1.609	0.48	28.20			1978	MPC01
		3.00			62.9	2.999	1.399	CT	1.623	0.55	29.70			1980	RA001
		2.00			62.9	3.026	1.503	CT	1.513	0.38	25.00			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /T _{YS}) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
7051 Cont'd	Plate Cont'd	3.62	R.T. Cont'd	T-L Cont'd	62.9	3.031	1.497	CT	1.485	0.40	25.20	Cont'd	Cont'd	1978	MPC01
		3.64			63.0	3.019	1.498	CT	1.630	0.46	27.40			1978	MPC01
		2.50			63.0	2.489	1.250	CT	1.294	0.40	25.70			1978	MPC01
		2.50			63.0	2.528	1.250	CT	1.289	0.40	25.50			1978	MPC01
		2.50			63.1	2.998	1.099	CT	1.589	0.36	24.20			1978	MPC01
		3.00			63.2	2.000	0.995	CT	1.036	0.41	25.90			1978	RA002
		4.25			63.2	2.975	1.500	CT	1.547	0.32	22.90			1978	MPC01
		1.75			63.2	2.980	1.498	CT	1.490	0.28	22.00			1978	MPC01
		5.50			63.4	2.988	1.500	CT	1.524	0.32	22.90			1978	MPC01
		1.37			63.4	1.996	0.998	CT	1.078	0.30	22.20			1978	MPC01
		2.25			63.4	2.985	1.503	CT	1.592	0.44	27.20			1978	MPC01
		4.25			63.4	2.983	1.499	CT	1.551	0.30	22.80			1978	MPC01
		3.25			63.4	3.027	1.499	CT	1.574	0.42	26.30			1978	MPC01
		2.35			63.5	3.000	1.499	CT	1.541	0.35	24.00			1980	RA001
		2.50			63.5	3.001	1.496	CT	1.572	0.39	25.40			1980	RA001
		2.00			63.5	2.990	1.499	CT	1.555	0.32	23.40			1978	MPC01
		2.50			63.6	3.001	1.499	CT	1.600	0.39	25.40			1978	RA002
		3.12			63.6	3.027	1.499	CT	1.574	0.42	26.30			1978	MPC01
		2.90			63.7	2.992	0.996	CT	1.466	0.42	26.30			1978	MPC01
		3.00			63.7	3.001	1.333	CT	1.574	0.33	23.40			1979	RA001
		3.00			63.7	3.004	1.400	CT	1.592	0.32	23.30			1978	MPC01
		3.54			63.7	3.000	1.497	CT	1.530	0.42	26.50			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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2124

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /ITS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.50	R.T. Cont'd	T-L Cont'd	63.8	3.028	1.498	CT	1.544	0.36	24.30	Cont'd	Cont'd	1978	MPC01
		2.75			63.8	2.999	1.498	CT	1.572	0.36	24.29			1980	RA001
		2.00			63.9	2.990	0.870	CT	1.465	0.34	24.20			1978	MPC01
		3.12			63.9	3.020	1.502	CT	1.480	0.46	27.60			1978	MPC01
		2.00			63.9	2.975	1.502	CT	1.517	0.44	27.20			1978	MPC01
		1.75			64.0	3.001	1.498	CT	1.564	0.33	23.29			1978	RA001
		2.50			64.0	2.989	1.499	CT	1.614	0.44	27.10			1978	MPC01
		3.00			64.1	3.001	1.428	CT	1.591	0.43	26.60			1978	RA001
		5.00			64.1	3.028	1.498	CT	1.514	0.38	25.10			1978	MPC01
		3.00			64.1	1.998	0.998	CT	1.029	0.41	26.00			1979	RA001
		2.50			64.1	2.999	1.498	CT	1.545	0.41	26.20			1980	RA001
		1.25			64.1	2.016	0.999	CT	1.028	0.34	23.80			1978	MPC01
		2.50			64.2	2.000	1.000	CT	1.040	0.42	26.30			1972	84368
		4.00			64.2	4.004	2.000	CT	2.042	0.42	26.40			1978	MPC01
		1.75			64.2	2.996	0.751	CT	1.498	0.30	22.90			1978	MPC01
		4.00			64.2	3.000	1.500	CT	1.590	0.27	21.00			1972	84368
		1.75			64.2	2.998	1.501	CT	1.588	0.44	27.20			1980	RA001
		2.75			64.2	3.000	1.496	CT	1.570	0.47	27.90			1980	RA001
		3.50			64.2	3.000	1.500	CT	1.520	0.33	23.30			1972	84368
		2.75			64.2	2.987	1.497	CT	1.563	0.44	27.30			1978	MPC01
		3.00			64.2	3.017	1.496	CT	1.539	0.44	27.50			1978	MPC01
		4.00			64.2	3.975	1.999	CT	2.067	0.42	26.60			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TVB) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	3.50	R.T. Cont'd	T-L Cont'd	64.2	3.000	1.500	CT	1.520	0.32	22.80	Cont'd	Cont'd	1972	84368
		4.00			64.2	3.000	1.500	CT	1.590	0.26	20.80			1972	84368
		0.62			64.2	1.004	0.500	CT	0.512	0.46	28.00			1978	MPC01
		3.00			64.2	2.996	1.400	CT	1.648	0.34	24.20			1978	MPC01
		2.50			64.2	2.000	1.000	CT	1.050	0.41	26.10			1972	84368
		2.50			64.2	3.001	1.497	CT	1.564	0.30	22.60			1980	RA001
		2.75			64.2	3.002	1.373	CT	1.539	0.39	25.60			1980	RA001
		2.00			64.2	3.003	1.495	CT	1.633	0.30	22.50			1980	RA001
		2.00			64.4	2.993	1.499	CT	1.616	0.36	25.00			1978	MPC01
		2.50			64.4	4.000	2.000	CT	2.170	0.54	29.90			1972	84368
		3.62			64.4	2.987	1.501	CT	1.643	0.30	22.80			1978	MPC01
		2.50			64.4	4.000	2.000	CT	2.180	0.54	30.00			1972	84368
		2.00			64.4	3.000	1.498	CT	1.551	0.41	26.10			1980	RA001
		3.25			64.4	3.030	1.498	CT	1.515	0.38	25.60			1978	MPC01
		3.00			64.4	3.007	1.400	CT	1.624	0.36	25.00			1978	MPC01
		1.50			64.5	3.002	1.499	CT	1.512	0.36	24.79			1980	RA001
		1.75			64.5	3.004	1.500	CT	1.500	0.36	24.60			1978	RA002
		2.50			64.6	2.998	1.500	CT	1.558	0.37	25.10			1980	RA001
		2.50			64.6	3.031	1.499	CT	1.576	0.32	23.40			1978	MPC01
		2.20			64.6	3.003	1.498	CT	1.553	0.35	24.20			1980	RA001
		2.00			64.7	1.990	0.751	CT	1.004	0.29	21.90			1972	84306
		2.00			64.7	1.990	0.753	CT	1.025	0.32	23.20			1972	84306

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 * (K _{1c} /TYS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.00	R.T. Cont'd	T-L Cont'd	64.7	2.000	0.751	CT	1.038	0.33	23.40	Cont'd	Cont'd	1972	84306
		2.50			64.8	2.489	1.250	CT	1.294	0.44	27.30			1978	MPC01
		2.00			64.8	3.011	1.499	CT	1.596	0.42	27.00			1978	MPC01
		2.50			64.8	4.000	2.000	CT	2.130	0.46	27.70			1972	84368
		2.50			64.8	2.522	1.250	CT	1.286	0.42	27.10			1978	MPC01
		2.50			64.8	4.000	2.000	CT	2.150	0.47	28.10			1972	84368
		2.25			64.9	1.996	0.998	CT	1.508	0.30	23.00			1978	MPC01
		2.50			64.9	2.012	0.999	CT	0.986	0.25	21.10			1978	MPC01
		2.35			64.9	3.001	1.500	CT	1.546	0.36	24.79			1978	RA002
		3.54			64.9	3.016	1.504	CT	1.508	0.48	28.70			1978	MPC01
		2.35			65.0	2.018	0.996	CT	1.009	0.32	23.80			1978	MPC01
		2.50			65.1	2.037	0.998	CT	0.986	0.30	23.00			1978	MPC01
		3.00			65.1	2.988	1.247	CT	1.464	0.32	23.60			1978	MPC01
		1.12			65.2	2.972	1.153	CT	1.486	0.28	22.20			1978	MPC01
		1.50			65.2	3.000	1.493	CT	1.500	0.38	26.00			1978	MPC01
		2.00			65.2	3.018	1.500	CT	1.509	0.38	25.80			1978	MPC01
		1.57			65.2	3.000	1.500	CT	1.520	0.51	29.40			1972	84368
		1.57			65.2	3.000	1.500	CT	1.540	0.54	30.30			1972	84368
		3.12			65.2	3.023	1.497	CT	1.602	0.44	27.70			1978	MPC01
		2.04			65.2	1.500	0.750	CT	0.740	0.22	19.50			1972	84368
		2.04			65.2	1.500	0.750	CT	0.730	0.22	19.40			1972	84368
		3.00			65.2	2.998	1.400	CT	1.619	0.38	26.00			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.50	R.T. Cont'd	T-L Cont'd	65.3	2.018	0.999	CT	1.009	0.55	30.80	Cont'd	Cont'd	1978	MPC01
		1.12			65.3	3.029	1.136	CT	1.484	0.27	22.10			1978	MPC01
		2.00			65.4	3.000	1.500	CT	1.540	0.34	24.10			1972	84368
		1.50			65.4	3.020	1.441	CT	1.540	0.42	27.20			1978	MPC01
		1.75			65.4	3.003	1.502	CT	1.568	0.40	26.20			1978	RA002
		1.75			65.4	3.028	1.499	CT	1.514	0.38	25.80			1978	MPC01
		2.00			65.4	3.000	1.500	CT	1.540	0.35	24.40			1972	84368
		1.50			65.4	2.996	1.478	CT	1.528	0.42	27.10			1978	MPC01
		1.62			65.4	3.001	1.500	CT	1.558	0.38	25.50			1978	RA002
		1.50			65.4	2.999	1.478	CT	1.531	0.37	25.40			1980	RA001
		2.40			65.4	3.001	1.497	CT	1.554	0.32	23.70			1980	RA001
		2.50			65.4	3.000	1.500	CT	1.551	0.38	25.79			1980	RA001
		2.00			65.5	1.994	0.899	CT	1.057	0.32	24.00			1978	MPC01
		2.00			65.6	3.001	1.500	CT	1.561	0.33	23.90			1978	RA002
		1.81			65.6	2.015	0.999	CT	1.048	0.32	24.10			1978	MPC01
		1.75			65.7	3.000	1.500	CT	1.560	0.33	24.00			1972	84368
		2.50			65.7	2.973	1.099	CT	1.546	0.28	22.80			1978	MPC01
		2.00			65.7	3.000	1.497	CT	1.564	0.34	24.50			1978	RA001
		1.75			65.7	3.000	1.500	CT	1.580	0.33	23.90			1972	84368
		2.03			65.7	3.014	1.501	CT	1.537	0.46	26.70			1978	MPC01
		3.12			65.7	2.981	1.400	CT	1.580	0.34	24.90			1978	MPC01
		2.50			65.8	2.999	1.499	CT	1.579	0.32	23.70			1978	RA002

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K ₀₁)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₀₁ TYS) (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K ₀₁ /√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	0.87	R.T. Cont'd	T-L Cont'd	65.8	1.502	0.750	CT	0.766	0.40	26.50	Cont'd	Cont'd	1978	MPC01
		0.87			65.8	1.508	0.750	CT	0.769	0.34	24.60			1978	MPC01
		2.25			65.8	2.002	0.999	CT	1.041	0.32	24.30			1978	MPC01
		2.50			65.8	3.002	1.100	CT	1.528	0.31	23.40			1980	RA001
		2.25			65.8	3.008	1.493	CT	1.504	0.30	23.50			1978	MPC01
		1.75			65.9	3.003	1.503	CT	1.552	0.36	25.20			1978	RA002
		3.00			66.0	2.500	0.755	CT	1.270	0.35	24.60			1972	84306
		2.50			66.0	3.017	0.999	CT	1.448	0.30	23.30			1978	MPC01
		3.00			66.0	2.500	0.754	CT	1.279	0.29	22.60			1972	84306
		2.03			66.0	3.020	1.500	CT	1.510	0.50	30.20			1978	MPC01
		3.00			66.0	3.026	1.247	CT	1.543	0.34	24.70			1978	MPC01
		1.50			66.2	2.988	1.441	CT	1.624	0.38	26.20			1978	MPC01
		1.50			66.2	2.997	1.499	CT	1.543	0.34	24.50			1978	RA001
		2.00			66.2	3.018	1.499	CT	1.539	0.38	26.10			1978	MPC01
		2.75			66.2	3.003	1.502	CT	1.584	0.43	27.70			1978	RA002
		2.50			66.2	1.997	0.999	CT	1.035	0.27	22.10			1979	RA001
		1.50			66.2	2.985	1.440	CT	1.552	0.40	26.60			1978	MPC01
		2.00			66.4	1.998	0.997	CT	1.019	0.32	24.50			1978	MPC01
		1.55			66.4	2.981	1.500	CT	1.550	0.28	23.00			1978	MPC01
		1.55			66.4	3.029	1.496	CT	1.484	0.30	23.70			1978	MPC01
		1.12			66.5	2.004	1.000	CT	1.022	0.36	25.40			1978	MPC01
		2.50			66.5	3.002	1.498	CT	1.544	0.36	25.50			1980	RA001

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (KSI)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TVS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (KSI√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	1.81	R.T. Cont'd	T-L Cont'd	66.5	2.990	1.497	CT	1.495	0.34	24.70	Cont'd	Cont'd	1978	MPC01
		1.55			66.6	1.998	0.999	CT	1.014	0.28	23.30			1978	MPC01
		1.25			66.6	1.981	1.000	CT	1.050	0.25	21.90			1978	MPC01
		1.73			66.7	2.999	1.499	CT	1.517	0.32	24.10			1978	RA002
		1.55			66.7	3.000	1.497	CT	1.522	0.31	23.60			1980	RA001
		2.50			66.8	1.987	0.998	CT	1.033	0.42	27.40			1978	MPC01
		1.50			66.9	1.983	0.999	CT	1.051	0.25	22.00			1978	MPC01
		1.50			67.1	2.998	1.496	CT	1.485	0.29	23.00			1978	RA001
		1.57			67.2	3.000	1.500	CT	1.590	0.35	25.30			1972	84368
		1.57			67.2	3.000	1.500	CT	1.590	0.35	25.10			1972	84368
		1.57			67.2	3.000	1.500	CT	1.560	0.32	24.00			1972	84368
		1.57			67.2	3.000	1.500	CT	1.560	0.32	24.00			1972	84368
		1.50			67.2	3.002	1.492	CT	1.524	0.29	23.20			1980	RA001
		1.73			67.2	3.002	1.498	CT	1.550	0.32	24.10			1978	RA002
		1.55			67.2	3.001	1.497	CT	1.563	0.28	22.50			1979	RA001
		1.75			67.3	3.002	1.496	CT	1.518	0.31	23.79			1980	RA001
		2.52			67.6	2.000	1.000	CT	0.860	0.28	22.60			1972	84368
		2.52			67.6	2.000	1.000	CT	0.980	0.29	23.10			1972	84368
		1.50			67.8	3.002	1.400	CT	1.591	0.27	22.60			1978	MPC01
		1.75			67.8	3.009	1.499	CT	1.595	0.28	23.60			1978	MPC01
		1.37			68.4	2.978	1.376	CT	1.489	0.25	22.50			1978	MPC01
		1.62			69.6	3.000	1.451	CT	1.624	0.29	24.10			1980	RA001

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T861	Plate	2.50	R.T.	S-T	62.3	2.000	1.000	CT	...	0.40	24.70	25.5	0.7	1974	88742
		2.50			62.3	2.000	1.000	CT	...	0.43	25.80			1974	88742
		2.50			62.3	2.000	1.000	CT	...	0.44	26.00			1974	88742
		1.50			...	1.002	0.498	CT	0.489	...	18.40			1980	RA001
		1.50			...	1.001	0.497	CT	0.525	...	20.50			1980	RA001
		1.50			...	1.001	0.501	CT	0.501	...	19.50			1978	RA001
T861	Plate	1.50	R.T.	S-L	...	1.001	0.502	CT	0.503	...	20.20	21.7	2.1	1978	RA001
		1.50			...	1.001	0.497	CT	0.518	...	20.40			1980	RA001
		6.00			52.7	2.015	0.999	CT	1.068	0.48	23.40			1978	MPC01
		6.00			52.7	1.994	1.000	CT	0.977	0.44	22.30			1978	MPC01
		6.00			52.8	1.998	0.997	CT	1.029	0.51	23.90			1978	RA001
		6.00			53.0	2.000	1.000	CT	0.940	0.42	22.20			1978	MPC01
		5.50			53.2	1.985	0.999	CT	1.052	0.44	22.50			1978	MPC01
		5.50			53.9	2.014	1.000	CT	0.987	0.52	24.80			1978	MPC01
		5.50			54.0	2.002	0.999	CT	1.021	0.50	24.60			1978	MPC01
		5.00			54.1	1.992	1.002	CT	0.996	0.48	24.30			1978	MPC01
		5.00			54.2	2.004	0.998	CT	1.002	0.34	20.50			1978	MPC01
		4.90			54.2	3.000	1.498	CT	1.480	0.43	22.70			1978	RA002
		6.00			54.2	1.996	1.000	CT	0.998	0.34	20.10			1978	MPC01
		6.00			54.3	1.006	0.496	CT	0.533	0.34	20.50			1978	MPC01
		5.50			54.3	2.019	0.999	CT	0.969	0.38	21.60			1978	MPC01
		5.12			54.4	1.991	0.999	CT	1.075	0.40	21.80			1978	MPC01
		4.90			54.4	1.988	1.000	CT	0.954	0.32	19.60			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.00	R.T. Cont'd	S.L. Cont'd	54.6	1.992	0.996	CT	0.996	0.38	21.80	Cont'd	Cont'd	1978	MPC01
		5.75			54.6	1.999	0.996	CT	0.986	0.36	20.90			1980	RA001
		6.00			54.6	3.000	1.500	CT	1.500	0.44	23.10			1978	MPC01
		5.50			54.7	1.984	0.999	CT	0.972	0.42	22.80			1978	MPC01
		6.00			54.8	3.000	1.500	CT	1.530	0.50	24.50			1972	84368
		6.00			54.8	3.000	1.500	CT	1.530	0.50	24.50			1972	84368
		5.00			54.9	2.984	1.199	CT	1.552	0.38	21.90			1978	MPC01
		4.50			55.2	2.004	0.996	CT	0.973	0.43	23.10			1980	RA001
		5.50			55.2	1.988	1.000	CT	1.014	0.52	25.90			1978	MPC01
		5.00			55.2	2.974	1.500	CT	1.576	0.46	23.90			1978	MPC01
		5.12			55.2	2.015	0.998	CT	1.048	0.46	24.20			1978	MPC01
		5.50			55.2	2.000	0.998	CT	0.978	0.35	20.90			1980	RA001
		6.00			55.4	1.993	1.000	CT	1.056	0.48	24.60			1978	MPC01
		6.00			55.7	1.996	1.000	CT	1.018	0.48	24.80			1978	MPC01
		5.50			55.8	2.021	0.998	CT	0.970	0.40	22.40			1978	MPC01
		5.00			55.8	1.998	1.000	CT	0.988	0.36	21.29			1979	RA001
		4.90			55.8	3.005	1.500	CT	1.517	0.36	21.40			1978	RA002
		5.00			55.9	2.972	1.498	CT	1.486	0.36	21.60			1978	MPC01
		5.00			56.0	2.000	0.999	CT	0.997	0.36	21.29			1980	RA001
		6.00			56.0	2.002	0.996	CT	1.002	0.44	23.60			1980	RA001
		5.25			56.0	2.975	1.500	CT	1.547	0.38	22.00			1978	MPC01
		5.50			56.0	2.010	1.000	CT	1.005	0.28	19.20			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.50	R.T. Cont'd	S.L. Cont'd	56.1	1.990	1.000	CT	1.035	0.32	20.30	Cont'd	Cont'd	1978	MPC01
		6.00			56.2	1.982	1.000	CT	1.011	0.48	24.80			1978	MPC01
		4.25			56.2	2.000	0.929	CT	0.957	0.33	20.60			1980	RA001
		5.00			56.3	2.980	1.498	CT	1.490	0.38	22.10			1978	MPC01
		5.50			56.3	2.010	1.000	CT	1.005	0.30	19.90			1978	MPC01
		4.50			56.3	2.000	1.001	CT	0.992	0.38	22.00			1978	RA002
		4.90			56.4	1.996	0.998	CT	1.018	0.32	20.60			1978	MPC01
		5.25			56.4	2.016	1.000	CT	1.008	0.28	19.30			1978	MPC01
		4.00			56.5	2.002	0.997	CT	1.026	0.38	22.29			1980	RA001
		5.50			56.6	2.008	1.000	CT	1.004	0.48	24.40			1978	MPC01
		5.50			56.6	1.984	0.999	CT	1.017	0.38	22.50			1978	MPC01
		6.00			56.6	1.998	0.998	CT	0.998	0.43	23.50			1978	RA001
		4.62			56.6	3.033	1.499	CT	1.456	0.48	24.70			1978	MPC01
		5.50			56.6	2.000	1.000	CT	1.020	0.36	22.00			1978	MPC01
		2.50			56.6	1.999	1.000	CT	1.062	0.35	21.29			1978	RA002
		4.90			56.7	3.000	1.499	CT	1.596	0.43	23.60			1978	RA002
		4.00			56.7	2.000	0.998	CT	0.980	0.36	21.60			1980	RA001
		5.50			56.7	1.992	0.997	CT	0.966	0.32	20.70			1978	MPC01
		4.50			56.7	1.998	0.998	CT	1.009	0.37	22.10			1979	RA001
		5.50			56.8	2.012	1.000	CT	1.006	0.36	21.80			1978	MPC01
		4.62			56.8	1.996	0.999	CT	0.996	0.30	20.20			1978	MPC01
		5.50			56.8	2.008	1.000	CT	1.004	0.28	19.70			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	4.90	R.T. Cont'd	S-L Cont'd	56.8	3.000	1.499	CT	1.526	0.37	22.00	Cont'd	Cont'd	1978	RA002
		5.00			56.9	2.988	1.499	CT	1.494	0.38	22.60			1978	MPC01
		5.00			56.9	1.997	0.998	CT	1.005	0.35	21.40			1979	RA001
		4.00			56.9	2.002	0.999	CT	0.994	0.35	21.50			1980	RA001
		5.50			57.0	2.002	1.000	CT	1.001	0.28	19.70			1978	MPC01
		5.50			57.0	1.994	1.000	CT	1.017	0.24	17.70			1978	MPC01
		5.50			57.0	2.014	1.000	CT	1.007	0.25	18.30			1978	MPC01
		5.50			57.0	1.994	1.000	CT	0.997	0.25	18.50			1978	MPC01
		4.50			57.0	2.017	0.999	CT	1.069	0.42	23.50			1978	MPC01
		5.50			57.1	2.000	1.000	CT	1.000	0.27	19.00			1978	MPC01
		4.75			57.1	2.000	0.998	CT	0.980	0.59	22.79			1980	RA001
		5.50			57.1	1.998	1.000	CT	0.999	0.30	20.50			1978	MPC01
		2.20			57.1	1.503	0.748	CT	0.774	0.27	19.00			1980	RA001
		5.50			57.1	2.008	1.000	CT	1.004	0.34	21.50			1978	MPC01
		5.50			57.1	2.010	1.000	CT	1.005	0.34	21.50			1978	MPC01
		5.00			57.1	2.012	1.000	CT	1.006	0.40	23.20			1978	MPC01
		5.50			57.3	2.010	1.000	CT	1.005	0.28	19.90			1978	MPC01
		4.50			57.3	3.000	1.500	CT	1.540	0.51	25.80			1972	84368
		4.50			57.3	3.000	1.500	CT	1.540	0.47	24.90			1972	84368
		4.00			57.3	1.998	0.999	CT	1.022	0.34	21.20			1978	RA001
		5.50			57.5	3.000	1.500	CT	1.470	0.43	23.90			1972	84368
		5.50			57.5	3.000	1.500	CT	1.500	0.42	23.60			1972	84368

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.50	R.T. Cont'd	S-L Cont'd	57.5	1.998	1.000	CT	0.999	0.28	20.00	Cont'd	Cont'd	1978	MPC01
		4.00			57.5	2.000	0.999	CT	0.984	0.33	21.20			1980	RA001
		5.50			57.5	1.988	1.000	CT	1.014	0.42	23.70			1978	MPC01
		5.50			57.6	1.988	1.000	CT	1.014	0.28	19.90			1978	MPC01
		4.31			57.6	1.992	0.999	CT	1.036	0.34	21.60			1978	MPC01
		5.50			57.6	2.006	0.999	CT	1.003	0.32	20.80			1978	MPC01
		4.00			57.6	3.001	1.500	CT	1.564	0.34	21.50			1978	RA001
		5.50			57.6	1.986	1.000	CT	0.993	0.34	21.60			1978	MPC01
		5.00			57.6	1.998	0.997	CT	0.997	0.36	22.10			1978	RA001
		5.00			57.6	1.992	1.000	CT	1.016	0.40	23.20			1978	MPC01
		4.55			57.6	2.004	0.999	CT	0.985	0.34	21.50			1980	RA001
		5.50			57.7	2.022	1.000	CT	1.011	0.30	20.20			1978	MPC01
		4.50			57.7	2.017	0.999	CT	1.049	0.38	22.90			1978	MPC01
		3.00			57.8	2.002	1.001	CT	1.001	0.30	20.70			1978	MPC01
		4.00			57.8	2.987	1.498	CT	1.643	0.40	23.50			1978	MPC01
		5.50			57.8	2.000	1.000	CT	1.000	0.36	22.00			1978	MPC01
		3.50			57.8	1.993	1.001	CT	1.096	0.32	21.00			1978	MPC01
		5.00			57.8	2.000	1.001	CT	1.009	0.29	19.70			1978	RA002
		5.50			57.8	1.984	1.000	CT	1.012	0.42	24.20			1978	MPC01
		5.50			57.9	1.992	1.000	CT	0.996	0.28	20.00			1978	MPC01
5.50	57.9	2.008	1.000	CT	1.004	0.25	19.00	1978	MPC01						
3.62	58.0	2.006	0.998	CT	1.003	0.32	21.30	1978	MPC01						

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K ₀₁ /in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.50	R.T. Cont'd	S-L Cont'd	58.0	3.008	1.501	CT	1.504	0.38	23.10	Cont'd	Cont'd	1978	MPC01
		4.00			58.0	2.004	1.001	CT	1.002	0.36	22.30			1978	MPC01
		5.00			58.1	2.010	1.000	CT	1.005	0.38	23.00			1978	MPC01
		2.50			58.1	1.986	1.000	CT	1.013	0.40	23.80			1978	MPC01
		5.50			58.1	2.016	1.000	CT	1.008	0.38	22.70			1978	MPC01
		5.50			58.1	2.002	1.000	CT	1.001	0.40	23.40			1978	MPC01
		5.50			58.1	3.024	1.500	CT	1.512	0.42	23.90			1978	MPC01
		2.50			58.1	2.008	0.996	CT	1.004	0.30	20.50			1978	MPC01
		5.00			58.1	1.992	1.000	CT	1.016	0.34	21.50			1978	MPC01
		4.90			58.1	2.000	1.001	CT	1.010	0.34	21.60			1978	RA002
		2.50			58.1	2.018	1.000	CT	1.029	0.42	24.30			1978	MPC01
		3.00			58.2	2.004	0.997	CT	1.030	0.31	20.70			1980	RA001
		5.50			58.2	2.010	1.000	CT	1.025	0.30	20.50			1978	MPC01
		2.70			58.2	1.988	1.002	CT	0.974	0.42	24.10			1978	MPC01
		5.00			58.2	2.006	0.999	CT	1.023	0.40	23.40			1978	MPC01
		5.00			58.2	1.984	0.999	CT	1.012	0.38	22.90			1978	MPC01
		5.50			58.2	3.008	1.500	CT	1.504	0.40	23.70			1978	MPC01
		5.50			58.3	1.996	1.000	CT	0.998	0.30	20.50			1978	MPC01
		5.25			58.3	3.020	1.500	CT	1.510	0.44	24.80			1978	MPC01
		3.12			58.3	2.016	1.001	CT	0.988	0.36	22.40			1978	MPC01
		5.50			58.3	1.998	1.000	CT	0.999	0.30	20.50			1978	MPC01
		5.50			58.3	1.998	1.000	CT	0.999	0.30	20.60			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.50	R.T. Cont'd	S-L Cont'd	58.3	2.014	1.000	CT	1.007	0.40	23.40	Cont'd	Cont'd	1978	MPC01
		5.50			58.3	2.014	1.000	CT	1.007	0.28	20.00			1978	MPC01
		3.00			58.3	2.000	0.998	CT	0.883	0.32	20.90			1980	RA001
		5.50			58.3	2.016	0.990	CT	1.008	0.30	20.90			1978	MPC01
		5.50			58.3	2.004	0.998	CT	1.002	0.50	26.60			1978	MPC01
		4.00			58.4	1.999	1.000	CT	1.015	0.28	19.79			1979	RA001
		1.81			58.4	1.502	0.748	CT	0.766	0.24	18.50			1978	MPC01
		4.50			58.4	2.978	1.500	CT	1.489	0.46	25.20			1978	MPC01
		5.50			58.4	2.020	0.997	CT	1.010	0.28	20.40			1978	MPC01
		5.00			58.4	3.010	1.500	CT	1.565	0.40	23.40			1978	MPC01
		2.50			58.5	1.996	1.000	CT	0.998	0.30	20.70			1978	MPC01
		5.50			58.5	2.018	1.000	CT	1.009	0.34	22.00			1978	MPC01
		4.25			58.5	1.987	0.999	CT	1.033	0.40	23.50			1978	MPC01
		4.25			58.5	1.996	1.000	CT	0.998	0.27	19.60			1978	MPC01
		5.00			58.6	1.983	0.999	CT	1.031	0.36	22.30			1978	MPC01
		5.50			58.6	2.006	0.999	CT	1.003	0.30	20.80			1978	MPC01
		3.50			58.6	2.008	1.000	CT	1.024	0.34	21.80			1978	MPC01
		5.00			58.6	1.988	1.000	CT	1.014	0.42	24.50			1978	MPC01
		5.50			58.6	2.008	1.000	CT	1.004	0.40	23.90			1978	MPC01
		4.50			58.6	2.996	1.500	CT	1.498	0.48	26.00			1978	MPC01
		5.00			58.6	1.994	0.999	CT	1.017	0.38	23.00			1978	MPC01
		4.00			58.6	1.996	0.999	CT	0.998	0.32	21.10			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 * (K _{1c} /TYS) ² (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.50	R.T. Cont'd	S-L Cont'd	58.6	1.998	1.000	CT	0.999	0.38	22.90	Cont'd	Cont'd	1978	MPC01
		5.50			58.6	2.018	0.999	CT	1.009	0.48	26.00			1978	MPC01
		5.50			58.7	2.010	1.000	CT	1.005	0.27	19.50			1978	MPC01
		3.54			58.7	1.998	0.997	CT	0.999	0.32	21.70			1978	MPC01
		5.50			58.8	2.016	1.000	CT	1.008	0.48	26.00			1978	MPC01
		5.50			58.8	2.004	0.998	CT	1.002	0.38	23.20			1978	MPC01
		5.50			58.8	2.000	1.000	CT	1.000	0.36	22.50			1978	MPC01
		4.25			58.8	2.002	1.000	CT	1.001	0.34	21.90			1978	MPC01
		3.50			58.8	1.996	1.000	CT	1.078	0.30	20.70			1978	MPC01
		5.50			58.8	2.014	1.000	CT	1.007	0.34	22.30			1978	MPC01
		4.50			58.8	2.999	1.500	CT	1.487	0.34	21.79			1978	RA002
		5.50			58.8	2.006	0.998	CT	1.003	0.40	23.80			1978	MPC01
		5.50			58.9	2.020	1.000	CT	1.010	0.28	20.30			1978	MPC01
		4.00			58.9	1.984	1.001	CT	1.012	0.38	23.10			1978	MPC01
		4.50			58.9	2.992	1.500	CT	1.496	0.44	25.00			1978	MPC01
		4.25			59.0	1.996	1.000	CT	1.018	0.36	23.00			1978	MPC01
		5.00			59.1	1.988	1.000	CT	1.014	0.34	22.00			1978	MPC01
		5.00			59.1	1.986	1.000	CT	1.013	0.34	22.00			1978	MPC01
		5.50			59.1	2.000	1.000	CT	1.400	0.30	20.79			1978	GD003
		5.50			59.1	2.002	1.000	CT	1.001	0.36	22.80			1978	MPC01
		5.50			59.1	2.000	1.000	CT	1.400	0.34	22.00			1978	GD003
		5.50			59.1	1.996	1.000	CT	0.998	0.28	20.20			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} ITS) ² (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.00	R.T. Cont'd	S-L Cont'd	59.1	1.984	0.999	CT	1.012	0.32	21.60	Cont'd	Cont'd	1978	MPC01
		5.00			59.1	2.010	1.000	CT	1.005	0.36	23.00			1978	MPC01
		2.75			59.1	2.000	1.000	CT	1.013	0.29	20.29			1978	RA002
		5.50			59.1	1.980	1.000	CT	0.990	0.46	25.90			1978	MPC01
		5.50			59.1	2.000	1.000	CT	1.400	0.32	21.40			1978	GD003
		5.50			59.1	2.008	1.000	CT	1.004	0.42	24.30			1978	MPC01
		3.12			59.2	1.998	0.999	CT	1.004	0.40	23.70			1978	RA001
		5.00			59.2	1.986	1.001	CT	1.013	0.36	22.90			1978	MPC01
		3.12			59.2	2.018	0.996	CT	0.989	0.32	21.80			1978	MPC01
		4.50			59.2	2.998	1.500	CT	1.499	0.48	26.30			1978	MPC01
		4.50			59.2	3.018	1.500	CT	1.509	0.48	26.10			1978	MPC01
		5.00			59.2	2.024	1.001	CT	1.012	0.36	22.90			1978	MPC01
		5.00			59.3	1.992	1.001	CT	1.016	0.40	23.90			1978	MPC01
		5.50			59.3	1.998	1.000	CT	0.999	0.42	24.90			1978	MPC01
		4.00			59.3	2.000	1.000	CT	0.980	0.38	23.40			1972	84368
		4.25			59.3	1.990	0.987	CT	1.015	0.42	24.40			1978	MPC01
		5.00			59.3	1.978	1.001	CT	1.009	0.42	24.70			1978	MPC01
		4.00			59.3	2.000	1.000	CT	0.980	0.44	24.80			1972	84368
		5.50			59.3	2.008	1.000	CT	1.024	0.50	26.90			1978	MPC01
		4.25			59.3	2.024	1.000	CT	1.012	0.30	21.20			1978	MPC01
		5.00			59.3	2.014	1.001	CT	1.007	0.40	24.00			1978	MPC01
		5.50			59.4	2.018	1.000	CT	1.009	0.34	22.20			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	4.25	R.T. Cont'd	S-L Cont'd	59.4	1.998	1.000	CT	0.999	0.40	23.90	Cont'd	Cont'd	1978	MPC01
		4.25			59.4	1.994	1.000	CT	1.017	0.38	23.70			1978	MPC01
		3.12			59.4	2.000	0.992	CT	1.000	0.30	21.20			1978	MPC01
		2.50			59.4	2.000	1.001	CT	1.018	0.35	22.50			1978	RA002
		4.25			59.4	1.994	1.001	CT	0.997	0.50	27.20			1978	MPC01
		1.75			59.4	1.002	0.499	CT	0.511	0.30	20.70			1980	RA001
		4.25			59.5	1.990	1.000	CT	1.015	0.48	26.30			1978	MPC01
		5.50			59.5	2.006	1.000	CT	1.003	0.36	22.70			1978	MPC01
		3.00			59.5	2.000	0.999	CT	1.000	0.30	21.00			1978	MPC01
		5.25			59.5	3.012	1.500	CT	1.506	0.42	24.50			1978	MPC01
		4.31			59.6	2.000	1.000	CT	0.970	0.42	24.50			1972	84368
		5.50			59.6	1.977	1.000	CT	1.008	0.40	24.30			1978	MPC01
		5.50			59.6	1.986	1.000	CT	1.013	0.32	21.80			1978	MPC01
		5.50			59.6	2.010	1.000	CT	1.005	0.34	22.50			1978	MPC01
		4.31			59.6	2.000	1.000	CT	0.950	0.41	24.10			1972	84368
		3.00			59.6	1.997	0.998	CT	0.999	0.26	19.50			1978	RA001
		4.25			59.7	2.014	1.002	CT	1.007	0.44	25.30			1978	MPC01
		3.50			59.7	2.004	0.995	CT	0.999	0.27	19.70			1980	RA001
		2.00			59.7	1.500	0.749	CT	0.756	0.38	23.29			1980	RA001
		5.50			59.8	2.012	1.000	CT	1.006	0.34	22.50			1978	MPC01
		3.50			59.8	1.998	0.998	CT	1.001	0.32	21.70			1979	RA001
		3.25			59.8	1.989	0.999	CT	1.054	0.30	21.20			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{IC}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{IC} /TYS) ^a (in.)	K _{IC}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{IC} (Ksi√in.)	K _{IC} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	5.50	R.T. Cont'd	S-L Cont'd	59.8	1.987	1.000	CT	1.033	0.28	20.50	Cont'd	Cont'd	1978	MPC01
		4.50			59.8	3.000	1.500	CT	1.530	0.36	22.70			1972	84368
		4.50			59.8	3.000	1.500	CT	1.520	0.35	22.50			1972	84368
		3.54			59.8	2.014	1.000	CT	1.007	0.34	22.30			1978	MPC01
		5.00			59.8	2.010	1.000	CT	1.005	0.36	23.10			1978	MPC01
		4.25			59.9	1.994	1.000	CT	1.017	0.27	20.30			1978	MPC01
		2.00			59.9	1.502	0.751	CT	0.751	0.22	18.40			1978	MPC01
		2.50			59.9	1.498	0.744	CT	0.760	0.26	19.60			1980	RA001
		3.00			59.9	2.006	1.001	CT	1.003	0.27	19.80			1978	MPC01
		3.50			59.9	2.000	1.000	CT	0.990	0.27	19.80			1972	84368
		3.50			59.9	2.000	1.000	CT	0.990	0.32	21.40			1972	84368
		4.50			59.9	2.998	1.500	CT	1.499	0.48	26.50			1978	MPC01
		5.50			60.0	1.998	1.000	CT	0.999	0.28	20.40			1978	MPC01
		2.90			60.0	1.988	0.998	CT	0.974	0.30	21.00			1978	MPC01
		3.00			60.0	2.003	0.995	CT	1.004	0.39	23.70			1980	RA001
		5.00			60.1	1.996	0.999	CT	0.998	0.44	25.70			1978	MPC01
		4.00			60.1	2.002	0.998	CT	0.998	0.35	22.60			1980	RA001
		4.50			60.1	3.008	1.501	CT	1.504	0.38	23.80			1978	MPC01
		3.54			60.1	2.004	0.998	CT	1.002	0.42	24.80			1978	MPC01
		3.12			60.1	1.957	0.998	CT	1.019	0.36	23.40			1978	MPC01
		2.50			60.2	2.010	0.996	CT	1.005	0.32	22.00			1978	MPC01
		4.50			60.2	3.029	1.500	CT	1.484	0.42	24.70			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	4.25	R.T. Cont'd	S-L Cont'd	60.2	1.986	1.000	CT	1.013	0.32	21.70	Cont'd	Cont'd	1978	MPC01
		5.50			60.2	2.016	1.000	CT	1.008	0.24	19.00			1978	MPC01
		4.00			60.2	3.000	1.500	CT	1.540	0.27	20.00			1972	84368
		4.00			60.2	3.000	1.500	CT	1.560	0.27	19.90			1972	84368
		2.50			60.4	1.999	0.999	CT	1.096	0.28	20.40			1978	RA002
		4.00			60.5	2.014	0.999	CT	1.007	0.34	22.60			1978	MPC01
		5.00			60.6	1.996	0.999	CT	1.018	0.34	23.00			1978	MPC01
		5.50			60.6	2.004	0.999	CT	1.002	0.30	21.70			1978	MPC01
		5.00			60.6	2.004	0.999	CT	1.022	0.36	23.10			1978	MPC01
		3.00			60.6	1.999	1.000	CT	0.963	0.29	20.70			1978	RA002
		3.00			60.6	2.004	0.996	CT	0.998	0.29	20.90			1980	RA001
		3.00			60.6	1.999	0.998	CT	0.991	0.27	20.00			1980	RA001
		4.00			60.6	3.026	1.501	CT	1.513	0.38	23.70			1978	MPC01
		4.00			60.6	2.992	1.500	CT	1.526	0.36	23.20			1978	MPC01
		4.25			60.7	2.016	1.000	CT	1.008	0.28	21.20			1978	MPC01
		3.12			60.7	1.998	0.997	CT	1.039	0.30	21.60			1978	MPC01
		2.50			60.7	0.986	0.502	CT	0.498	0.22	18.10			1978	RA002
		3.00			60.7	1.992	0.999	CT	1.019	0.24	19.20			1978	MPC01
		3.00			60.8	1.997	0.998	CT	1.020	0.30	21.40			1978	RA001
		5.00			60.8	2.016	1.000	CT	1.008	0.25	20.00			1978	MPC01
		3.62			60.8	1.996	0.999	CT	0.979	0.25	19.50			1980	RA001
		3.00			60.9	2.006	1.001	CT	1.023	0.27	20.20			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	3.62	R.T. Cont'd	S-L Cont'd	60.9	3.014	1.499	CT	1.667	0.28	20.80	Cont'd	Cont'd	1978	MPC01
		4.25			60.9	1.984	1.000	CT	1.012	0.30	21.70			1978	MPC01
		3.50			60.9	2.016	0.997	CT	1.008	0.34	22.70			1978	MPC01
		3.00			60.9	2.000	1.000	CT	0.991	0.31	21.70			1978	RA002
		5.50			60.9	2.004	1.000	CT	1.002	0.27	20.30			1978	MPC01
		2.50			60.9	2.006	0.998	CT	1.003	0.28	21.30			1978	MPC01
		4.00			60.9	1.997	0.999	CT	1.002	0.36	23.20			1978	RA001
		2.00			61.0	1.498	0.751	CT	0.756	0.29	21.10			1978	RA002
		5.50			61.1	2.014	1.003	CT	1.007	0.32	22.30			1978	MPC01
		4.25			61.1	1.996	1.001	CT	0.998	0.36	23.50			1978	MPC01
		3.50			61.1	1.998	0.999	CT	1.022	0.33	22.20			1978	RA001
		1.62			61.2	0.986	0.503	CT	0.480	0.24	19.10			1978	RA002
		3.00			61.2	1.996	0.998	CT	1.018	0.25	19.70			1978	MPC01
		3.00			61.2	2.000	0.999	CT	0.980	0.28	20.79			1980	RA001
		3.75			61.3	3.016	1.499	CT	1.538	0.30	21.90			1978	MPC01
		2.50			61.3	1.499	0.745	CT	0.750	0.24	19.29			1980	RA001
		5.50			61.4	1.986	1.003	CT	1.013	0.34	23.00			1978	MPC01
		3.50			61.4	2.000	1.000	CT	0.990	0.43	25.40			1972	84368
		2.50			61.4	2.000	1.000	CT	1.100	0.27	20.80			1978	MPC01
		2.00			61.4	0.997	0.498	CT	0.504	0.25	19.60			1978	RA001
		3.50			61.4	2.000	1.000	CT	0.990	0.41	24.70			1972	84368
		4.90			61.4	3.000	1.500	CT	1.585	0.36	23.40			1978	RA002

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K ₀₁)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K ₀₁ /in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	4.00	R.T. Cont'd	S.L. Cont'd	61.5	3.000	1.500	CT	1.530	0.30	21.70	Cont'd	Cont'd	1978	MPC01
		1.75			61.6	0.998	0.503	CT	0.520	0.21	17.90			1980	RA001
		3.00			61.6	2.000	1.001	CT	1.012	0.22	18.50			1978	RA002
		4.90			61.6	3.000	1.499	CT	1.592	0.35	23.10			1978	RA002
		5.50			61.6	1.986	1.000	CT	1.013	0.38	24.30			1978	MPC01
		2.35			61.7	1.502	0.750	CT	0.763	0.33	22.50			1980	RA001
		1.73			61.7	1.004	0.497	CT	0.542	0.21	18.40			1978	MPC01
		3.12			61.7	2.002	0.998	CT	0.996	0.29	21.29			1980	RA001
		3.00			61.8	1.999	0.994	CT	1.000	0.23	19.10			1980	RA001
		3.00			61.8	1.980	0.999	CT	1.010	0.27	20.80			1978	MPC01
		2.00			61.9	1.498	0.749	CT	0.794	0.25	20.10			1978	MPC01
		4.75			62.0	2.004	1.000	CT	1.002	0.25	20.40			1978	MPC01
		2.50			62.0	1.984	0.998	CT	1.012	0.24	19.70			1978	MPC01
		2.25			62.0	0.998	0.499	CT	0.539	0.24	19.80			1978	MPC01
		3.00			62.0	2.010	1.001	CT	1.005	0.27	20.80			1978	MPC01
		3.00			62.0	1.995	0.998	CT	0.960	0.30	21.50			1980	RA001
		3.00			62.0	1.997	0.999	CT	1.007	0.24	19.40			1979	RA001
		2.50			62.0	1.499	0.744	CT	0.741	0.23	18.90			1980	RA001
		5.50			62.1	2.001	1.000	CT	1.006	0.30	22.00			1978	MPC01
		2.50			62.1	2.000	1.000	CT	1.020	0.40	25.30			1978	MPC01
		2.50			62.1	2.000	1.000	CT	0.940	0.31	21.80			1972	84368
		3.00			62.1	1.997	0.998	CT	1.022	0.29	21.50			1979	RA001

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TVB) ² (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.50	R.T. Cont'd	S-L Cont'd	62.1	2.000	1.000	CT	0.960	0.34	22.90	Cont'd	Cont'd	1972	84368
		2.50			62.1	1.998	1.000	CT	1.019	0.38	24.50			1978	MPC01
		3.00			62.1	2.003	0.998	CT	0.995	0.29	21.50			1980	RA001
		1.50			62.2	0.996	0.501	CT	0.508	0.34	23.10			1978	MPC01
		2.00			62.2	1.489	0.746	CT	0.774	0.25	20.20			1978	MPC01
		2.75			62.2	1.988	1.001	CT	1.014	0.28	21.50			1978	MPC01
		2.75			62.2	2.004	0.996	CT	1.004	0.31	22.20			1980	RA001
		1.75			62.2	1.000	0.500	CT	0.503	0.21	18.10			1978	RA002
		1.50			62.2	0.998	0.501	CT	0.509	0.34	23.10			1978	MPC01
		2.50			62.2	1.502	0.750	CT	0.768	0.30	21.60			1980	RA001
		4.75			62.4	1.994	1.001	CT	1.017	0.30	22.40			1978	MPC01
		2.75			62.4	1.499	0.746	CT	0.755	0.33	22.79			1980	RA001
		2.50			62.5	2.000	1.001	CT	1.020	0.24	19.60			1978	MPC01
		5.50			62.6	2.000	1.000	CT	1.000	0.28	21.60			1978	MPC01
		1.75			62.6	0.979	0.500	CT	0.475	0.31	22.29			1978	RA002
		2.50			62.6	2.000	1.001	CT	0.979	0.28	21.10			1978	RA002
		5.50			62.6	2.000	1.000	CT	1.000	0.30	22.10			1978	MPC01
		2.50			62.6	2.020	0.998	CT	0.990	0.30	22.10			1978	MPC01
		2.00			62.6	1.512	0.751	CT	0.771	0.22	19.20			1978	MPC01
		2.04			62.7	1.500	0.750	CT	0.730	0.21	18.10			1972	84368
		2.04			62.7	1.500	0.750	CT	0.730	0.20	17.60			1972	84368
		2.50			62.7	1.500	0.751	CT	0.776	0.22	18.70			1980	RA001

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.50	R.T. Cont'd	S-L Cont'd	62.7	1.500	0.747	CT	0.738	0.28	21.00	Cont'd	Cont'd	1980	RA001
		2.03			62.8	1.471	0.750	CT	0.764	0.32	23.00			1978	MPC01
		1.50			62.8	1.008	0.498	CT	0.534	0.28	21.40			1978	MPC01
		2.25			62.8	1.510	0.749	CT	0.785	0.21	18.50			1978	MPC01
		2.00			62.8	1.493	0.748	CT	0.791	0.25	20.60			1978	MPC01
		2.00			62.9	1.489	0.749	CT	0.774	0.28	21.50			1978	MPC01
		3.00			62.9	2.015	1.001	CT	1.048	0.30	22.60			1978	MPC01
		2.03			62.9	1.496	0.750	CT	0.763	0.36	24.10			1978	MPC01
		2.50			62.9	2.000	1.000	CT	0.930	0.28	21.20			1972	84368
		2.50			62.9	2.000	1.000	CT	0.930	0.28	21.10			1972	84368
		1.81			63.0	1.006	0.496	CT	0.533	0.18	17.10			1978	MPC01
		1.50			63.0	1.002	0.500	CT	0.521	0.32	22.80			1978	MPC01
		2.00			63.0	1.002	0.495	CT	0.531	0.22	19.20			1978	MPC01
		1.50			63.0	1.000	0.500	CT	0.510	0.27	21.00			1978	MPC01
		1.57			63.0	1.000	0.500	CT	0.490	0.29	21.60			1972	84368
		2.40			63.2	1.500	0.747	CT	0.749	0.27	20.79			1980	RA001
		3.00			63.3	1.994	1.001	CT	1.017	0.30	22.40			1978	MPC01
		1.81			63.4	0.998	0.499	CT	0.508	0.16	17.00			1978	MPC01
		2.75			63.4	2.000	0.998	CT	0.983	0.32	22.79			1980	RA001
		2.50			63.5	2.000	1.000	CT	0.960	0.29	21.80			1972	84368
		2.50			63.5	2.000	1.000	CT	0.970	0.31	22.20			1972	84368
		1.55			63.5	0.999	0.501	CT	0.469	0.22	19.00			1980	RA001

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^{1/2} (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	1.55	R.T. Cont'd	S.L. Cont'd	63.6	1.000	0.498	CT	0.540	0.28	22.10	Cont'd	Cont'd	1978	MPC01
		1.75			63.6	1.010	0.499	CT	0.525	0.18	17.50			1978	MPC01
		2.50			63.7	2.000	0.998	CT	0.960	0.27	21.20			1978	MPC01
		2.35			63.9	0.998	0.498	CT	0.539	0.18	17.40			1978	MPC01
		1.50			63.9	0.999	0.501	CT	0.487	0.27	21.00			1980	RA001
		2.00			64.1	1.502	0.751	CT	0.766	0.28	22.00			1978	MPC01
		3.12			64.2	2.006	0.999	CT	1.003	0.24	20.50			1978	MPC01
		2.75			64.3	1.499	0.752	CT	0.767	0.29	21.90			1978	RA002
		1.55			64.3	1.000	0.497	CT	0.540	0.28	21.90			1978	MPC01
		1.57			64.4	1.000	0.500	CT	0.490	0.27	21.30			1972	84368
		1.57			64.4	1.000	0.500	CT	0.500	0.25	20.50			1972	84368
		2.50			64.4	2.000	0.998	CT	0.984	0.26	20.90			1978	RA002
		2.50			64.4	1.499	0.745	CT	0.764	0.17	17.20			1980	RA001
		2.00			64.5	1.518	0.751	CT	0.774	0.25	20.70			1978	MPC01
		1.75			64.5	1.012	0.501	CT	0.526	0.19	18.30			1978	MPC01
		2.00			64.6	1.499	0.751	CT	0.783	0.19	18.00			1978	RA002
		1.75			64.8	0.979	0.502	CT	0.509	0.24	20.10			1978	RA002
		2.50			64.8	2.002	0.998	CT	1.021	0.18	18.00			1978	MPC01
		2.00			64.8	1.504	0.751	CT	0.782	0.22	20.00			1978	MPC01
		2.00			64.8	1.498	0.746	CT	0.746	0.18	17.79			1980	RA001
		2.25			64.9	1.489	0.749	CT	0.774	0.19	18.80			1978	MPC01
		2.00			64.9	1.491	0.750	CT	0.805	0.22	20.10			1978	MPC01

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.00	R.T. Cont'd	S-L Cont'd	64.9	1.500	0.750	CT	0.740	0.22	19.20	Cont'd	Cont'd	1972	84368
		2.00			64.9	1.500	0.750	CT	0.740	0.22	19.10			1972	84368
		1.73			65.0	0.986	0.502	CT	0.467	0.26	21.10			1978	RA002
		1.75			65.2	0.998	0.500	CT	0.495	0.18	17.50			1980	RA001
		1.75			65.2	1.000	0.500	CT	0.500	0.17	17.29			1978	RA001
		1.75			65.3	1.010	0.505	CT	0.505	0.18	18.10			1978	MPC01
		1.75			65.3	1.000	0.500	CT	0.460	0.19	18.20			1972	84368
		1.75			65.3	1.000	0.500	CT	0.490	0.22	19.50			1972	84368
		1.57			65.4	1.000	0.500	CT	0.470	0.21	18.80			1972	84368
		2.25			65.5	1.489	0.749	CT	0.774	0.22	19.90			1978	MPC01
		2.50			65.6	2.016	0.999	CT	1.028	0.21	19.60			1978	MPC01
		2.25			65.6	1.504	0.749	CT	0.782	0.25	21.30			1978	MPC01
		2.50			65.7	1.991	1.001	CT	1.055	0.24	21.00			1978	MPC01
		1.55			65.8	0.986	0.500	CT	0.528	0.18	18.00			1978	MPC01
		2.50			66.1	1.500	0.749	CT	0.760	0.16	16.79			1979	RA001
		2.52			66.3	2.000	1.000	CT	0.970	0.24	20.60			1972	84368
		2.52			66.3	2.000	1.000	CT	0.950	0.20	18.80			1972	84368
		1.62			66.6	1.001	0.498	CT	0.475	0.16	16.90			1980	RA001
		1.73			67.2	1.001	0.498	CT	0.519	0.21	19.90			1978	RA002
		1.75			67.4	1.000	0.520	CT	0.520	0.15	17.50			1978	MPC01
		1.55			68.1	1.001	0.499	CT	0.517	0.19	18.79			1979	RA001

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}													
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K _{sd})	SPECIMEN		CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B			K _{1c} (K _{sd} /in.)	K _{1c} MEAN	STAN DEV	
T851	Plate	3.50	81	L-T	64.4	3.000	1.500	1.547	0.45	27.40	28.5	1.6	1973
		3.50				3.000	1.499	1.533	0.53	29.60			1973
T851	Plate	3.50	81	T-L	63.7	3.000	1.498	1.601	0.39	25.00	24.7	0.4	1973
		3.50				3.000	1.498	1.618	0.37	24.40			1973
T851	Plate	3.50	82	S-L	59.8	2.000	0.998	0.986	0.35	22.40			1973
		3.50				2.000	0.998	0.941	0.33	21.80	22.1	0.4	1973
T851	Plate	3.00	84	S-L	61.3	2.000	0.999	0.931	0.38	23.90			1973
		3.00				2.000	0.999	0.954	0.41	25.00	24.5	0.8	1973
T851	Plate	2.50	250	L-T	56.9	2.000	1.000	...	0.78	31.90	33.0	1.0	1974
		2.50				2.000	1.000	...	0.88	33.90			1974
		2.50				2.000	1.000	...	0.85	33.30			1974
		2.50				2.000	1.000	...	0.59	27.70			1974
T851	Plate	2.50	250	T-L	57.3	2.000	1.000	...	0.56	26.90	27.2	0.4	1974
		2.50				2.000	1.000	...	0.56	27.10			1974
		2.50				2.000	1.000	...	0.46	24.60			1974
		2.50				2.000	1.000	...	0.53	26.20			1974
T851 (417)	Plate	4.50	-320	L-T	76.4	3.000	1.500	1.478	0.44	31.90	32.7	1.1	1973
		1.75				3.000	1.500	1.641	0.43	33.50			1973
T851 (417)	Plate	1.75	-320	T-L	78.1	3.000	1.500	1.648	0.35	29.10	...	...	1973
		4.50				3.000	1.501	1.514	0.23	22.10			1973
T851 (417)	Plate	4.50	-112	L-T	67.6	3.000	1.501	1.474	0.43	27.90	28.8	1.2	1973
		1.75				3.000	1.499	1.642	0.41	29.60			1973

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}		DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN			STAN DEV
T851 (417)	Plate	4.50	-112	T-L	66.0	3.000	1.498	CT	1.567	0.33	24.10	24.4	0.4	1973	86213
		1.75			70.7	3.000	1.500	CT	1.623	0.30	24.60			1973	86213
T851 (417)	Plate	4.50	-112	S-L	64.8	3.000	1.500	CT	1.461	0.27	21.30	...	...	1973	86213
		4.00			60.6	2.000	1.000	NB	0.925	0.80	34.30			1973	86213
T851 (417)	Plate	5.50	R.T.	L-T	61.1	3.000	1.501	CT	1.495	0.56	28.80	28.9	2.8	1973	86213
		5.50			61.1	3.000	1.501	CT	1.496	0.53	28.10			1973	86213
		4.00			62.5	2.000	1.000	NB	0.932	0.65	31.90			1973	86213
		4.00			62.5	2.000	1.000	NB	0.941	0.68	32.70			1973	86213
		4.50			63.1	3.000	1.501	CT	1.479	0.44	26.60			1973	86213
		4.50			63.4	3.000	1.502	CT	1.518	0.44	26.70			1973	86213
		4.50			63.4	3.000	1.500	CT	1.536	0.46	27.70			1973	86213
		3.50			63.9	3.000	1.501	CT	1.510	0.61	31.60			1973	86213
		3.50			63.9	3.000	1.501	CT	1.523	0.61	31.50			1973	86213
		1.57			64.2	3.000	1.501	CT	1.581	0.48	28.00			1973	86213
		1.57			64.2	3.000	1.501	CT	1.589	0.46	27.40			1973	86213
		1.57			65.2	3.000	1.501	CT	1.477	0.69	34.20			1973	86213
		1.57			65.2	3.000	1.500	CT	1.526	0.73	35.20			1973	86213
		3.00			65.4	1.000	0.499	CT	0.519	0.36	24.80			1973	86213
3.00	65.4	3.000	1.412	CT	1.546	0.48	23.70	1973	86213						
3.00	65.4	3.000	0.999	CT	1.536	0.45	27.80	1973	86213						
3.00	65.4	2.000	0.999	CT	1.014	0.42	26.80	1973	86213						
3.00	66.2	1.000	0.498	CT	0.515	0.36	25.00	1973	86213						
3.00	66.2	3.000	1.412	CT	1.532	0.48	26.90	1973	86213						

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 (417) Cont'd	Plate Cont'd	3.00	R.T. Cont'd	L-T Cont'd	66.2	3.000	0.998	CT	1.530	0.48	28.90	Cont'd	Cont'd	1973	86213
		3.00			66.2	2.000	0.998	CT	1.015	0.40	26.50			1973	86213
		1.75			67.0	3.000	1.502	CT	1.583	0.45	28.30			1973	86213
		1.75			67.0	3.000	1.501	CT	1.572	0.46	28.60			1973	86213
		1.57			67.2	3.000	1.502	CT	1.555	0.39	26.50			1973	86213
		1.57			67.2	3.000	1.502	CT	1.560	0.37	26.00			1973	86213
		1.75			67.6	3.000	1.499	CT	1.631	0.46	29.10			1973	86213
		5.50			59.3	3.000	1.501	CT	1.514	0.34	21.80			1973	86213
		5.50			59.3	3.000	1.501	CT	1.540	0.35	22.30			1973	86213
		4.00			59.4	2.000	1.001	NB	0.938	0.49	26.40			1973	86213
T851 (417)	Plate	4.50	R.T.	T-L	61.4	3.000	1.501	CT	1.523	0.34	22.50	23.8	2.4	1973	86213
		4.50			61.4	3.000	1.501	CT	1.566	0.36	23.30			1973	86213
		4.50			61.5	3.000	1.500	CT	1.482	0.29	21.10			1973	86213
		4.00			62.6	2.000	0.998	NB	0.918	0.40	24.90			1973	86213
		3.50			62.7	3.000	1.501	CT	1.546	0.46	26.80			1973	86213
		3.50			62.7	3.000	1.501	CT	1.550	0.44	26.40			1973	86213
		3.00			64.4	1.000	0.499	CT	0.525	0.27	21.10			1973	86213
		3.00			64.4	2.000	0.999	CT	0.996	0.26	20.70			1973	86213
		3.00			64.4	3.000	1.412	CT	1.553	0.31	22.70			1973	86213
		3.00			64.4	3.000	0.998	CT	1.520	0.31	22.70			1973	86213
		3.00			64.4	3.000	0.498	CT	1.526	0.31	22.70			1973	86213
		3.00			64.8	3.000	1.412	CT	1.551	0.29	22.20			1973	86213

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 (417) Cont'd	Plate Cont'd	3.00	R.T. Cont'd	T-L Cont'd	64.8	3.000	0.998	CT	1.541	0.31	22.70	Cont'd	Cont'd	1973	86213
		3.00			64.8	1.000	0.498	CT	0.516	0.28	21.80			1973	86213
		3.00			64.8	2.000	0.998	CT	1.034	0.28	21.50			1973	86213
		3.00			64.8	3.000	0.497	CT	1.512	0.30	22.50			1973	86213
		1.57			65.2	3.000	1.501	CT	1.541	0.54	30.30			1973	86213
		1.57			65.2	3.000	1.501	CT	1.522	0.51	29.40			1973	86213
		1.75			65.7	3.000	1.502	CT	1.565	0.33	24.00			1973	86213
		1.75			65.7	3.000	1.500	CT	1.577	0.33	23.90			1973	86213
		1.75			66.0	3.000	1.500	CT	1.643	0.34	24.50			1973	86213
		1.57			67.2	3.000	1.502	CT	1.561	0.32	24.00			1973	86213
		1.57			67.2	3.000	1.502	CT	1.565	0.32	24.00			1973	86213
		1.57			67.2	3.000	1.501	CT	1.591	0.35	25.10			1973	86213
T851 (417)	Plate	1.57	R.T.	S-L	67.2	3.000	1.501	CT	1.591	0.35	25.30	21.3	2.0	1973	86213
		5.50			57.5	3.000	1.499	CT	1.500	0.42	23.50			1973	86213
		5.50			57.5	3.000	1.501	CT	1.466	0.43	23.90			1973	86213
		4.00			59.3	2.000	0.997	CT	0.881	0.44	24.80			1973	86213
		4.50			59.8	3.000	1.501	CT	1.534	0.36	22.70			1973	86213
		4.50			59.8	3.000	1.501	CT	1.623	0.35	22.50			1973	86213
		3.00			60.0	2.000	1.000	CT	1.015	0.29	20.40			1973	86213
		4.50			60.9	3.000	1.501	CT	1.459	0.29	20.70			1973	86213
		2.50			62.1	2.000	0.996	CT	0.963	0.34	22.90			1973	86213
		2.50			62.1	2.000	0.998	CT	0.939	0.31	21.80			1973	86213

TABLE 7.9.2.1 (CONTINUED)

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ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T851 (417) Cont'd	Plate Cont'd	2.50	R.T. Cont'd	S.L. Cont'd	62.9	2.000	0.998	CT	0.928	0.28	21.10	Cont'd	Cont'd	1973	86213
		2.50			62.9	2.000	0.998	CT	0.931	0.28	21.20			1973	86213
		1.57			63.0	1.000	0.501	CT	0.500	0.28	21.00			1973	86213
		1.57			63.0	1.000	0.500	CT	0.493	0.29	21.60			1973	86213
		2.50			63.1	2.000	0.998	CT	0.929	0.26	20.30			1973	86213
		1.57			64.4	1.000	0.500	CT	0.499	0.27	21.30			1973	86213
		1.57			64.4	1.000	0.500	CT	0.499	0.25	20.50			1973	86213
		1.75			65.3	0.990	0.501	CT	0.459	0.19	18.20			1973	86213
		1.62			65.4	1.000	0.500	CT	0.488	0.16	16.70			1973	86213
		1.57			65.4	0.990	0.500	CT	0.471	0.21	18.80			1973	86213
		3.50			65.4	3.000	1.500	CT	1.537	0.45	27.90			1973	86213
		2.00			65.5	3.990	2.000	CT	2.087	0.62	32.50			1973	86213
T851 (417)	Plate	2.00	81	L-T	67.9	3.990	1.995	CT	2.032	0.43	28.10	29.5	2.6	1973	86213
		3.50			64.2	3.000	1.498	CT	1.520	0.33	23.30			1973	86213
		3.50			64.2	3.000	1.499	CT	1.545	0.32	22.80			1973	86213
		2.00			65.3	4.000	2.000	CT	2.159	0.56	30.90			1973	86213
		2.00			66.7	4.000	1.999	CT	2.142	0.33	24.30			1973	86213
		3.75			61.3	2.000	0.999	CT	1.015	0.51	27.80			1973	86213
T851 (417)	Plate	3.38	82	L-T	61.6	2.000	1.000	CT	0.955	0.47	26.70	28.0	3.5	1973	86213
		3.38			61.6	2.000	1.000	CT	0.950	0.51	27.80			1973	86213
		3.15			63.0	2.000	0.998	CT	0.995	0.49	28.00			1973	86213
		3.75			64.2	2.000	1.001	CT	1.000	0.45	27.10			1973	86213

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 (417) Cont'd	Plate Cont'd	3.75	82 Cont'd	L-T Cont'd	64.2	2.000	0.998	CT	0.997	0.44	27.00	Cont'd	Cont'd	1973	86213
		3.75			64.6	2.000	1.000	CT	1.012	0.43	26.90			1973	86213
		3.15			65.1	2.000	0.999	CT	0.980	0.43	27.00			1973	86213
		3.38			65.3	2.000	1.000	CT	0.957	0.41	26.40			1973	86213
		3.38			65.3	2.000	0.998	CT	0.965	0.41	26.30			1973	86213
		2.50			65.4	1.990	1.002	CT	1.018	0.43	27.10			1973	86213
		2.50			65.4	1.990	1.001	CT	1.006	0.44	27.30			1973	86213
		2.50			65.6	4.000	1.997	CT	2.103	0.77	36.40			1973	86213
		2.50			65.6	4.000	1.997	CT	2.097	0.78	36.70			1973	86213
		3.15			65.7	2.000	0.999	CT	0.960	0.39	26.10			1973	86213
		3.15			65.7	2.000	0.998	CT	0.969	0.41	26.70			1973	86213
		2.50			65.8	4.000	1.998	CT	2.181	0.51	29.80			1973	86213
		2.50			66.2	3.990	1.998	CT	2.146	0.65	33.70			1973	86213
		2.50			66.2	3.990	2.000	CT	2.159	0.69	34.90			1973	86213
		2.75			67.0	2.000	1.000	CT	0.968	0.36	25.50			1973	86213
		2.75			67.4	2.000	0.998	CT	0.963	0.34	24.90			1973	86213
		2.75			67.4	2.000	0.998	CT	0.945	0.34	24.80			1973	86213
		2.75			68.6	2.000	0.999	CT	0.968	0.34	25.30			1973	86213
		2.52			69.7	2.000	0.999	CT	0.963	0.35	26.00			1973	86213
		2.52			69.7	2.000	0.998	CT	0.939	0.33	25.20			1973	86213
		2.52			69.7	2.000	1.001	CT	0.960	0.33	25.50			1973	86213

TABLE 7.9.2.1 (CONTINUED)

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2124

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T861 (417)	Plate	3.75	82	T-L	59.2	2.000	0.999	CT	1.014	0.42	24.20	25.0	2.4	1973	86213
		3.38			61.0	2.000	0.998	CT	0.958	0.54	28.40			1973	86213
		3.38			61.0	2.000	0.999	CT	0.974	0.51	27.50			1973	86213
		3.00			61.8	3.000	1.500	CT	1.560	0.29	21.10			1973	86213
		3.75			63.0	2.000	1.000	CT	0.999	0.34	23.20			1973	86213
		3.75			63.0	2.000	1.001	CT	1.005	0.34	23.30			1973	86213
		3.15			63.4	2.000	1.000	CT	1.000	0.43	26.30			1973	86213
		3.75			63.8	2.000	1.001	CT	1.011	0.34	23.50			1973	86213
		2.50			64.2	1.990	1.001	CT	1.039	0.42	26.30			1973	86213
		2.50			64.2	1.990	1.001	CT	1.055	0.41	26.10			1973	86213
		3.15			64.2	2.000	1.000	CT	1.003	0.38	24.90			1973	86213
		2.50			64.4	4.000	1.997	CT	2.099	0.35	24.00			1973	86213
		2.50			64.4	4.000	1.997	CT	2.183	0.54	30.00			1973	86213
		2.50			64.4	3.990	1.999	CT	2.172	0.54	29.90			1973	86213
		3.38			64.7	2.000	0.998	CT	0.989	0.41	26.10			1973	86213
		2.50			64.8	4.000	2.001	CT	2.134	0.46	27.70			1973	86213
		2.50			64.8	4.000	1.998	CT	2.153	0.47	28.10			1973	86213
		3.15			65.0	2.000	1.001	CT	0.982	0.37	25.00			1973	86213
		3.15			65.0	2.000	0.998	CT	0.995	0.36	24.60			1973	86213
		2.75			65.3	2.000	0.999	CT	0.968	0.35	24.30			1973	86213
		1.62			65.4	3.000	1.500	CT	1.581	0.26	21.20			1973	86213
		2.75			66.1	2.000	1.000	CT	0.957	0.34	24.40			1973	86213
		2.75			66.1	2.000	1.001	CT	0.949	0.32	23.60			1973	86213
		2.75			66.9	2.000	0.998	CT	0.940	0.27	22.10			1973	86213

TABLE 7.9.2.1 (CONTINUED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 (417) Cont'd	Plate Cont'd	2.52	82 Cont'd	T-L Cont'd	67.0	2.000	0.998	CT	0.979	0.31	23.70	Cont'd	Cont'd	1973	86213
		2.52			67.6	2.000	0.998	CT	0.965	0.28	22.60			1973	86213
		2.52			67.6	2.000	1.000	CT	0.976	0.29	23.10			1973	86213
		2.52			68.6	2.000	0.995	CT	0.987	0.29	23.40			1973	86213
T851 (417)	Plate	3.75	82	S-L	58.1	2.000	1.000	CT	0.976	0.37	22.30	22.0	2.3	1973	86213
		3.38			58.6	2.000	1.001	CT	0.947	0.40	23.90			1973	86213
		3.50			59.9	2.000	0.998	CT	0.987	0.27	19.80			1973	86213
		3.50			59.9	2.000	0.998	CT	0.992	0.32	21.40			1973	86213
		3.50			61.4	1.990	1.001	CT	0.985	0.40	24.70			1973	86213
		3.50			61.4	1.990	1.001	CT	0.988	0.43	25.40			1973	86213
		3.38			61.4	2.000	0.998	CT	0.962	0.48	26.90			1973	86213
		3.75			62.2	2.000	1.001	CT	0.983	0.36	23.60			1973	86213
		3.15			62.3	2.000	1.000	CT	0.938	0.34	22.90			1973	86213
		3.15			62.6	2.000	0.999	CT	0.965	0.33	22.90			1973	86213
		2.75			63.3	2.000	1.000	CT	0.935	0.28	21.30			1973	86213
		2.50			63.5	1.990	1.001	CT	0.965	0.29	21.80			1973	86213
		2.50			63.5	1.990	1.001	CT	0.974	0.31	22.20			1973	86213
		2.75			64.2	2.000	0.998	CT	0.929	0.25	20.50			1973	86213
		2.52			65.1	2.000	1.000	CT	0.963	0.29	22.00			1973	86213
		2.75			66.0	2.000	0.999	CT	0.948	0.18	17.80			1973	86213
		2.52			66.1	2.000	0.998	CT	0.947	0.21	19.30			1973	86213
		2.52			66.3	2.000	0.998	CT	0.945	0.20	18.50			1973	86213
		2.52			66.3	2.000	0.998	CT	0.974	0.24	20.60			1973	86213

TABLE 7.9.2.1 (CONTINUED)

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2124

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 (417)	Plate	3.75	84	S-L	62.2	2.000	0.998	CT	0.998	0.34	23.10	...	...	1973	86213
		6.00	57.1		3.000	1.500	CT	1.522	0.65	29.10	27.2	4.7	1973	86213	
		6.00	57.1		3.000	1.500	CT	1.549	0.68	29.70			1973	86213	
		4.50	59.8		3.000	1.501	CT	1.532	0.77	33.10			1973	86213	
		4.50	59.8		3.000	1.500	CT	1.509	0.71	31.90			1973	86213	
		2.04	65.4		1.500	0.762	CT	0.762	0.26	21.10			1973	86213	
T851 (SP)	Plate	2.04	R.T.	L-T	65.4	1.500	0.762	CT	0.738	0.27	21.30	23.1	2.7	1973	86213
		4.00			65.5	3.000	1.500	CT	1.578	0.31	23.00			1973	86213
		4.00			65.5	2.990	1.501	CT	1.562	0.30	22.50			1973	86213
		2.00			66.2	3.000	1.501	CT	1.555	0.62	30.30			1973	86213
		2.00			66.2	3.000	1.502	CT	1.564	0.53	30.40			1973	86213
		6.00			55.0	3.000	1.500	CT	1.563	0.46	23.70			1973	86213
T851 (SP)	Plate	6.00	R.T.	T-L	55.0	3.000	1.500	CT	1.576	0.48	24.10	23.1	2.7	1973	86213
		4.50			58.5	3.000	1.500	CT	1.567	0.51	26.50			1973	86213
		2.04			65.2	1.500	0.751	CT	0.729	0.22	19.40			1973	86213
		2.04			65.2	1.500	0.752	CT	0.741	0.22	19.50			1973	86213
		2.00			65.4	3.000	1.500	CT	1.541	0.34	24.10			1973	86213
		2.00			65.4	3.000	1.502	CT	1.542	0.35	24.40			1973	86213

TABLE 7.9.2.1 (CONCLUDED)

ALUMINUM 2124 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi ^{1/2} /in.)	K _{1c} MEAN	STAN DEV		
T851 (SP)	Plate	6.00	R.T.	S-L	54.8	3.000	1.500	CT	1.535	0.50	24.50	21.4	3.2	1973	86213
		6.00			54.8	3.000	1.500	CT	1.526	0.50	24.50			1973	86213
		4.50			57.3	3.000	1.500	CT	1.542	0.47	24.90			1973	86213
		4.50			57.3	3.000	1.502	CT	1.543	0.51	25.80			1973	86213
		4.00			60.2	3.000	1.501	CT	1.540	0.28	20.00			1973	86213
		4.00			60.2	3.000	1.502	CT	1.560	0.27	19.90			1973	86213
		2.04			62.7	1.500	0.751	CT	0.726	0.21	18.10			1973	86213
		2.04			62.7	1.500	0.752	CT	0.729	0.20	17.60			1973	86213
		2.00			64.9	1.490	0.750	CT	0.739	0.22	19.10			1973	86213
		2.00			64.9	1.500	0.750	CT	0.739	0.22	19.20			1973	86213

TABLE 7.9.2.2

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ALUMINUM 2124 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _i	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T851	Plate	0.25	R.T.	T-L	59.7	3.000	0.248	1.230	1.600	15.50	22.60	35.13	33.3	4.3	43.80*	38.2	2.8	1973	86213
		0.25			55.4	3.000	0.249	1.143	1.786	15.50	22.10	32.56			48.04*			1973	86213
		0.25			55.4	3.000	0.249	1.127	1.710	15.20	20.40	29.76			42.28*			1973	86213
		0.25			55.5	3.000	0.249	1.122	1.786	16.20	20.20	29.39			43.91*			1973	86213
		0.25			55.5	3.000	0.249	1.120	1.763	15.00	20.90	30.37			44.75*			1973	86213
		0.25			59.8	3.000	0.249	1.220	1.780	18.80	26.80	41.41			58.04*			1973	86213
		0.25			62.9	3.000	0.249	1.240	1.700	13.40	18.60	29.09			38.31			1973	86213
		0.25			55.4	3.000	0.250	1.127	1.755	14.30	21.70	31.66			46.23*			1973	86213
		0.25			57.4	3.000	0.250	1.320	1.790	15.00	20.30	33.30			44.24*			1973	86213
		0.25			57.4	3.000	0.250	1.210	1.720	14.70	20.90	32.10			43.59*			1973	86213
		0.25			59.7	3.000	0.250	1.190	1.700	16.40	25.00	37.93			51.50*			1973	86213
		0.25			59.7	3.000	0.250	1.220	1.690	16.30	22.20	34.30			45.45*			1973	86213
		0.25			59.8	3.000	0.250	1.230	1.700	16.00	23.40	36.37			48.20*			1973	86213
		0.25			59.9	3.000	0.250	1.220	1.700	14.00	20.90	32.29			43.05*			1973	86213
		0.25			59.9	3.000	0.250	1.240	1.640	13.40	18.50	28.93			36.73			1973	86213
		0.25			59.9	3.000	0.250	1.250	1.640	13.30	17.10	26.90			33.95			1973	86213
		0.25			61.1	3.000	0.250	1.240	1.770	17.70	26.80	41.91			57.67*			1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.9.2.2 (CONCLUDED)

ALUMINUM 2124 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _e	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T851 Cont'd	Plate Cont'd	0.25			61.1	3.000	0.250	1.240	1.800	17.30	29.10	45.51*			63.92*				1973	86213
		0.25			61.1	3.000	0.250	1.240	1.710	18.80	26.60	41.60			55.13*				1973	86213
		0.25			62.9	3.000	0.250	1.240	1.600	13.30	19.90	31.12			38.57				1973	86213
		0.25	R.T. Cont'd	T.L. Cont'd	62.9	3.000	0.250	1.200	1.650	14.00	21.20	32.36			42.35				1973	86213
		0.25			55.5	3.000	0.251	1.128	1.778	14.90	21.90	31.99			47.36*				1973	86213
		0.25			57.4	3.000	0.251	1.220	1.740	15.30	18.50	28.58			39.07				1973	86213
		0.25			59.8	3.000	0.252	1.220	1.880	16.80	23.60	36.46			54.52*				1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

RESISTANCE CURVE

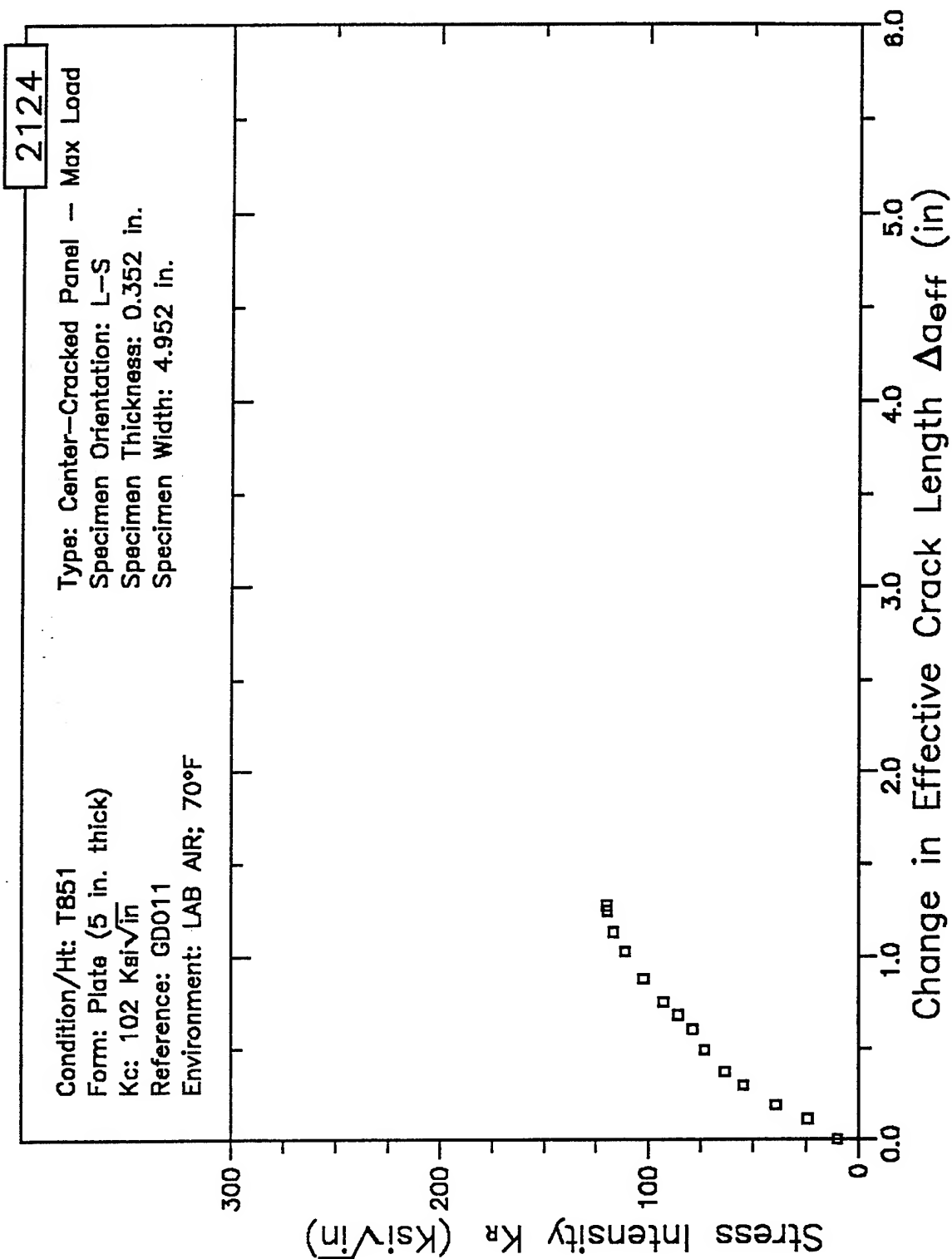


Figure 7.9.2.3.1

RESISTANCE CURVE

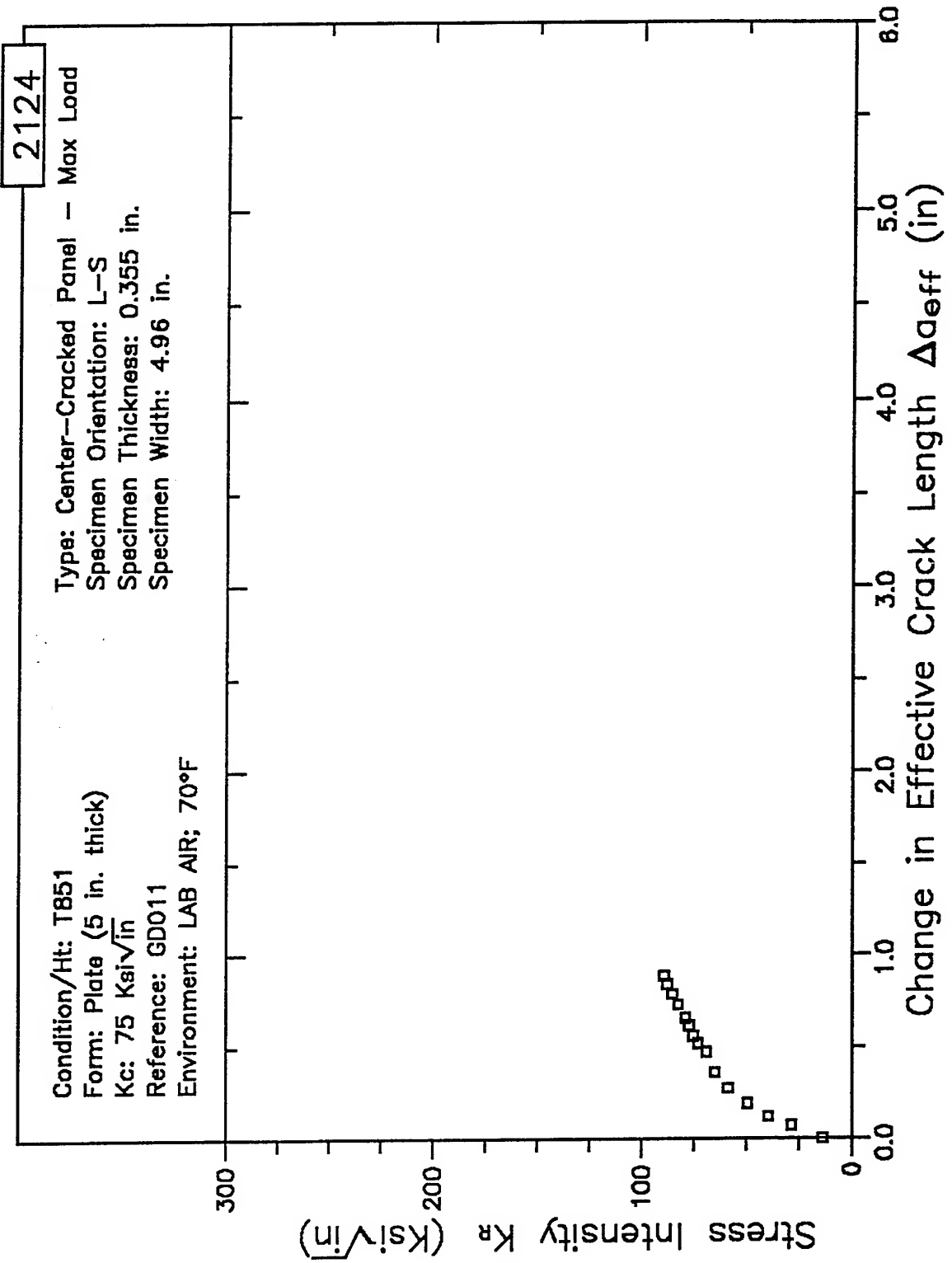


Figure 7.9.2.3.2

RESISTANCE CURVE

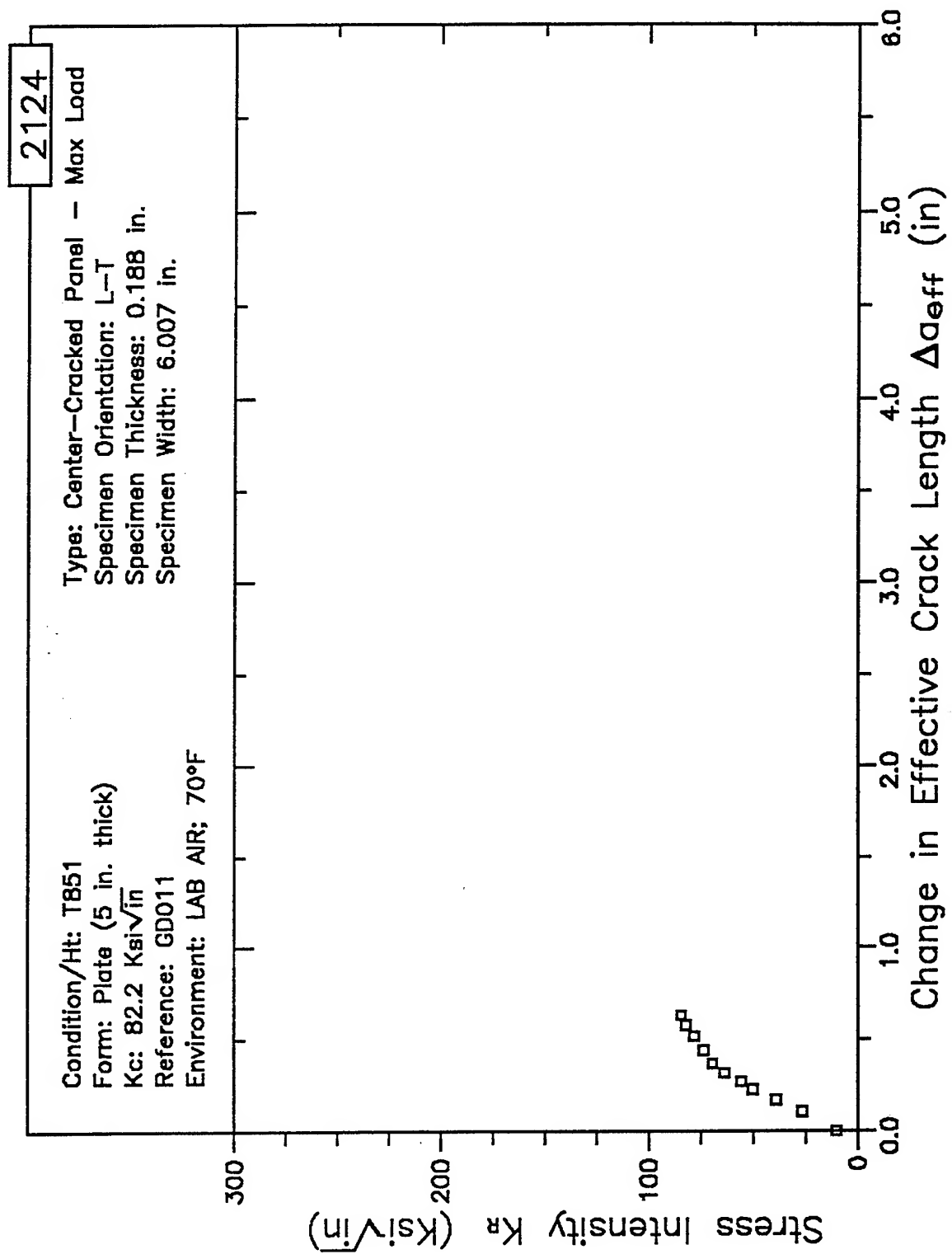


Figure 7.9.2.3.3

RESISTANCE CURVE

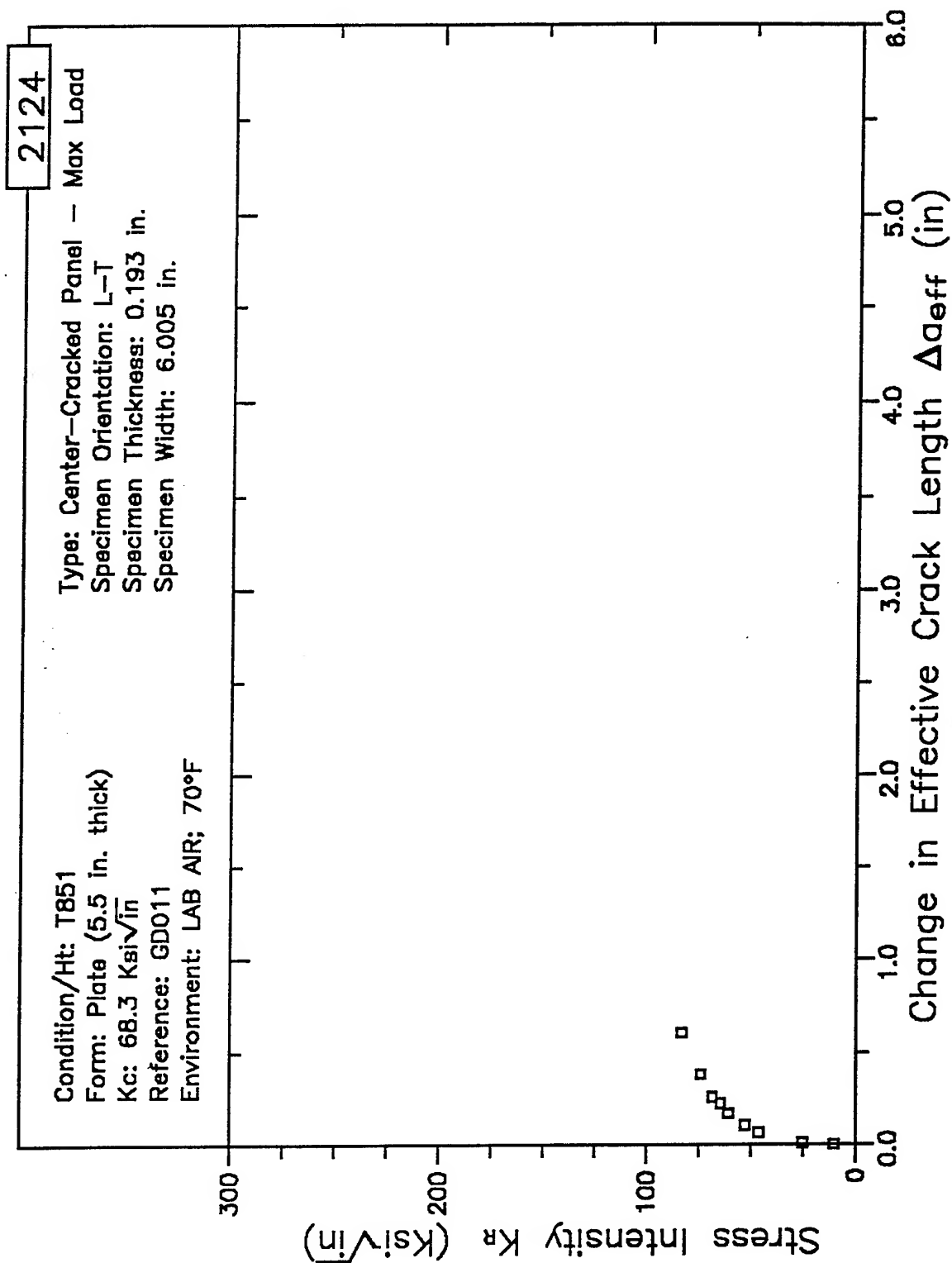


Figure 7.9.2.3.4

RESISTANCE CURVE

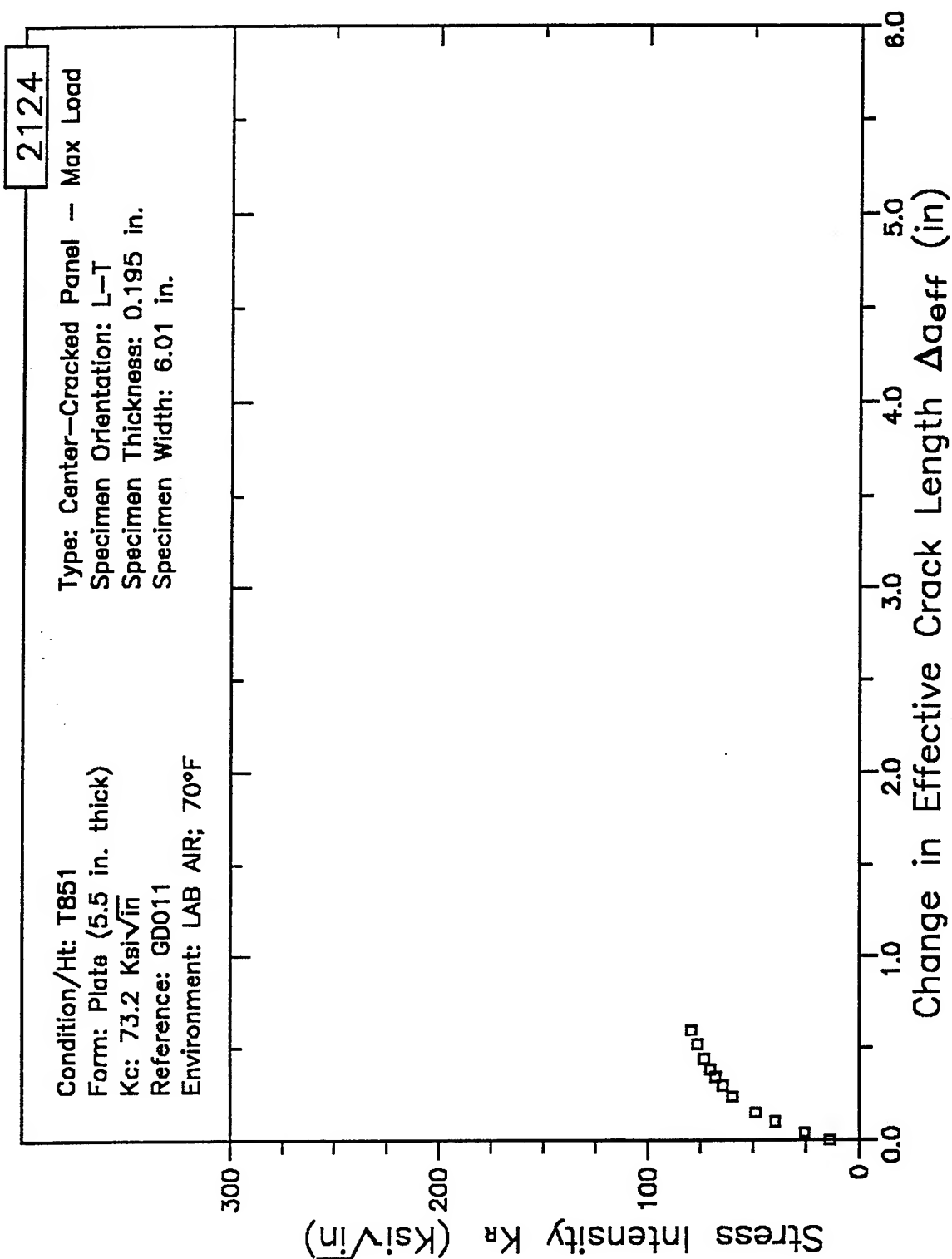


Figure 7.9.2.3.5

RESISTANCE CURVE

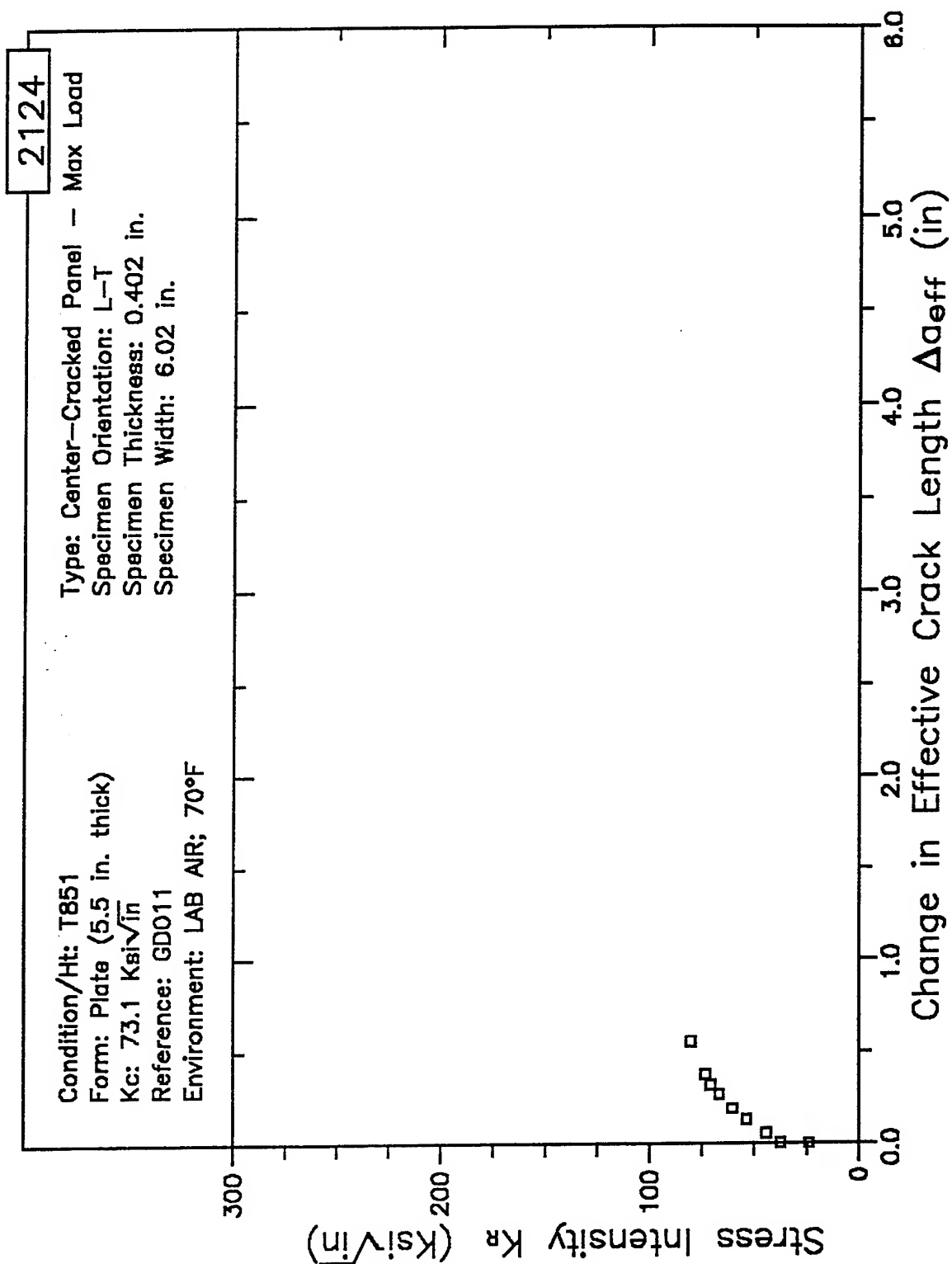


Figure 7.9.2.3.6

RESISTANCE CURVE

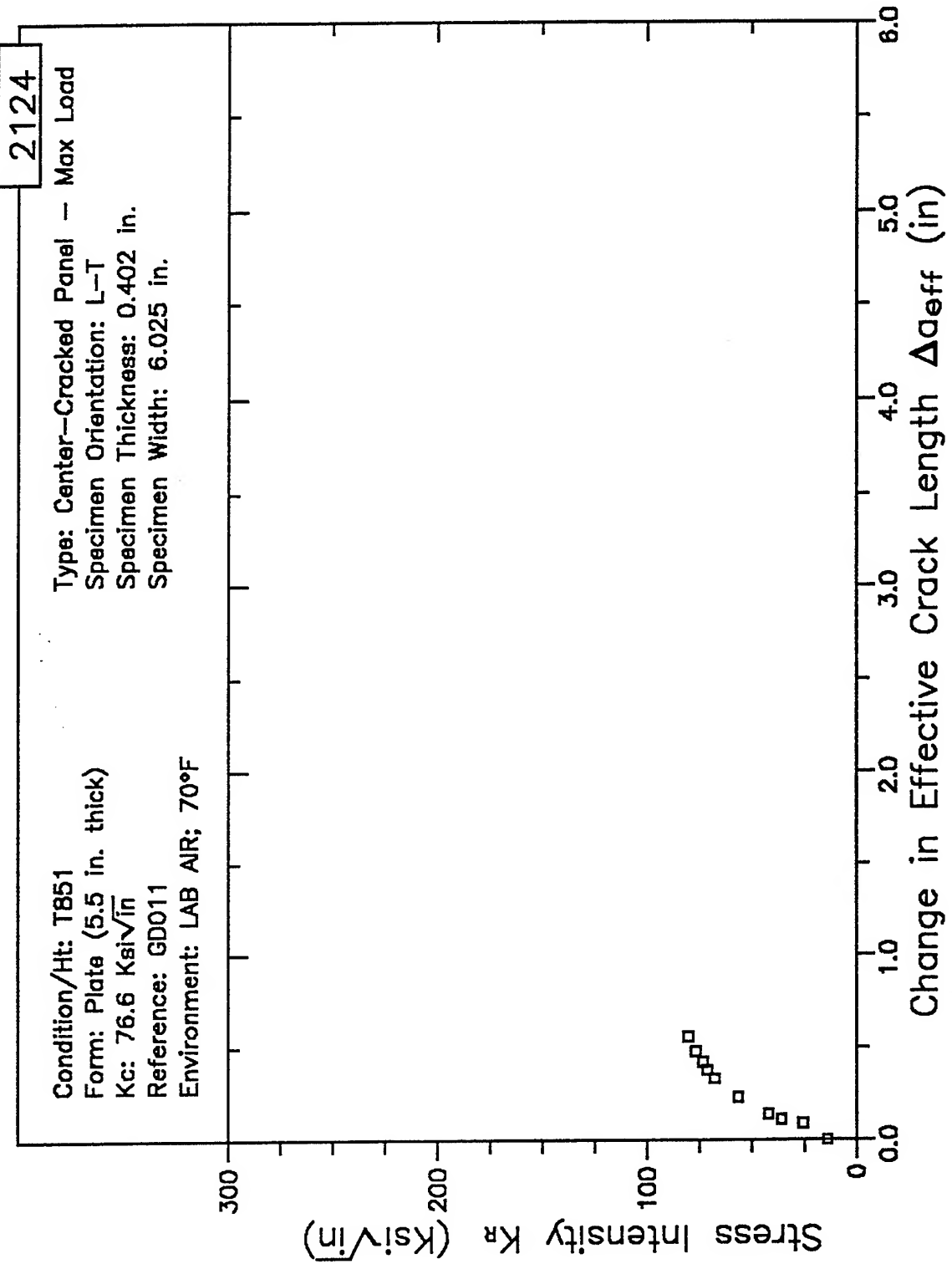


Figure 7.9.2.3.7

RESISTANCE CURVE

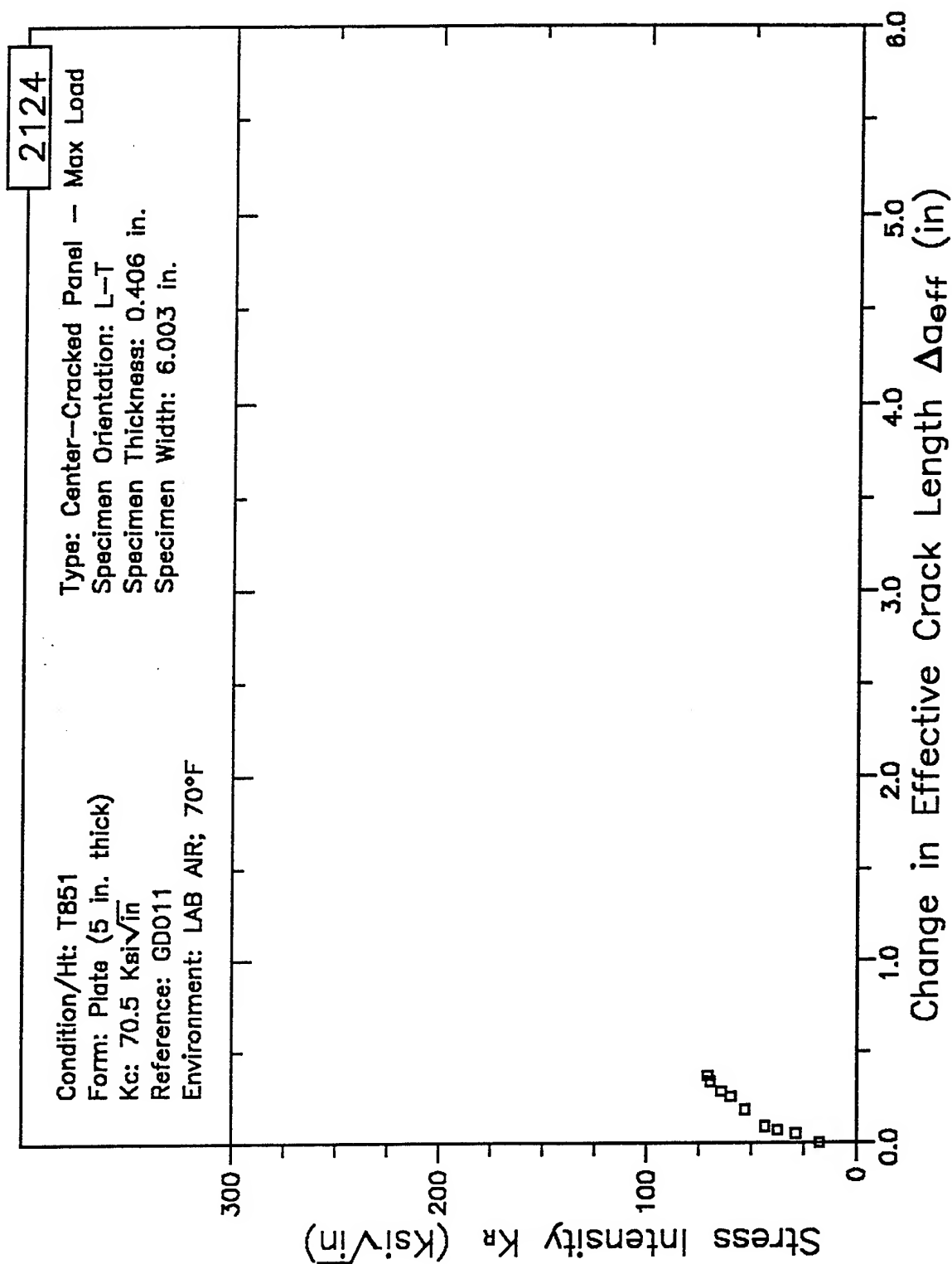


Figure 7.9.2.3.8

RESISTANCE CURVE

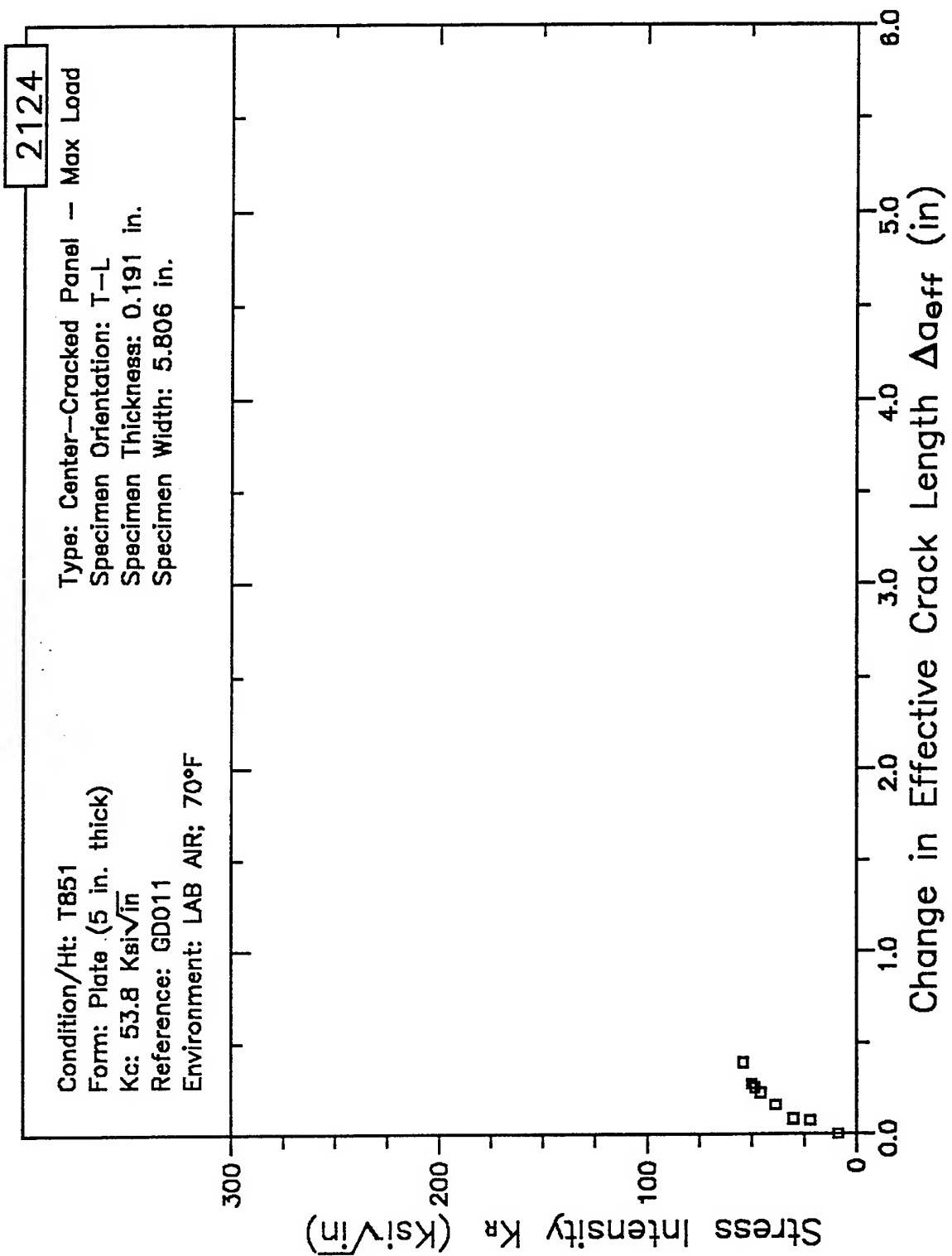


Figure 7.9.2.3.9

RESISTANCE CURVE

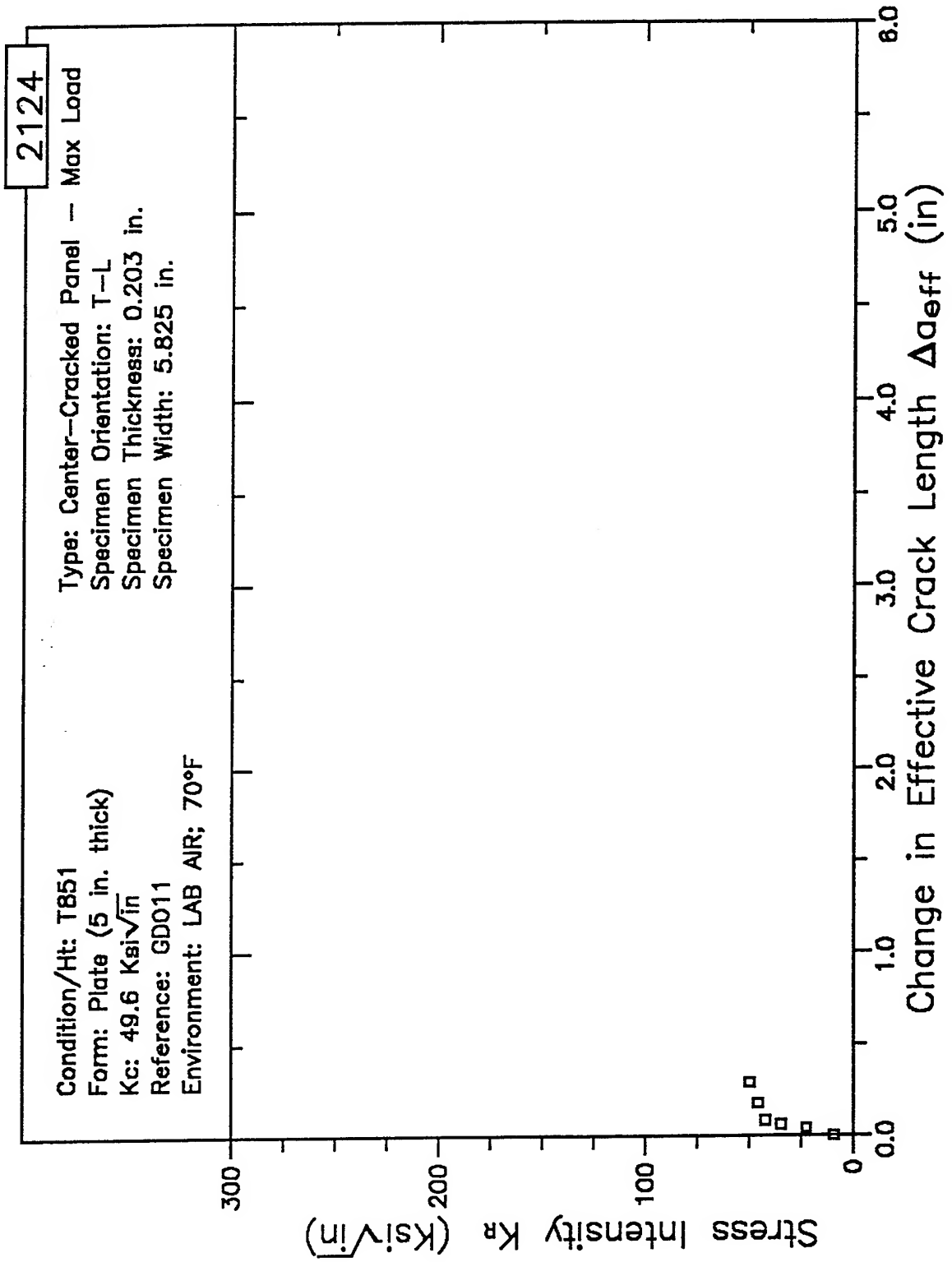
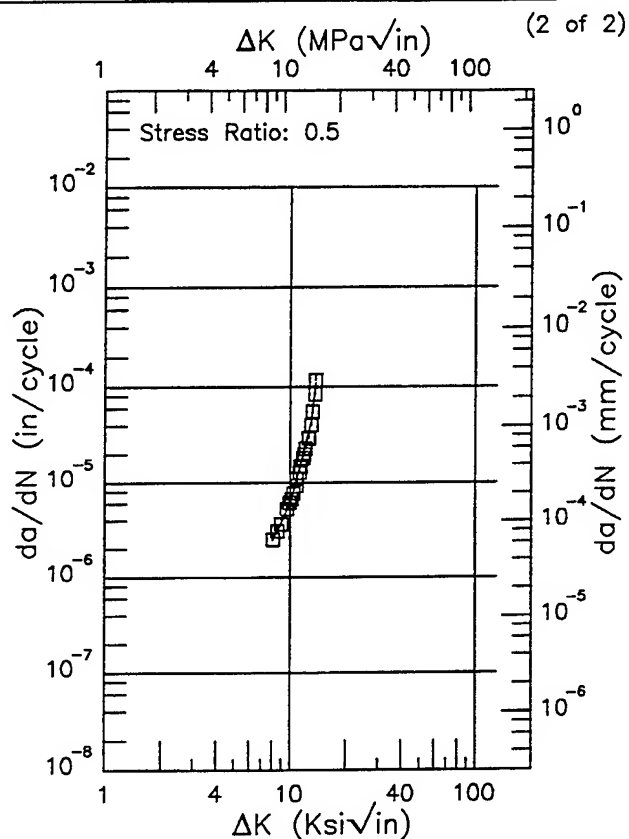
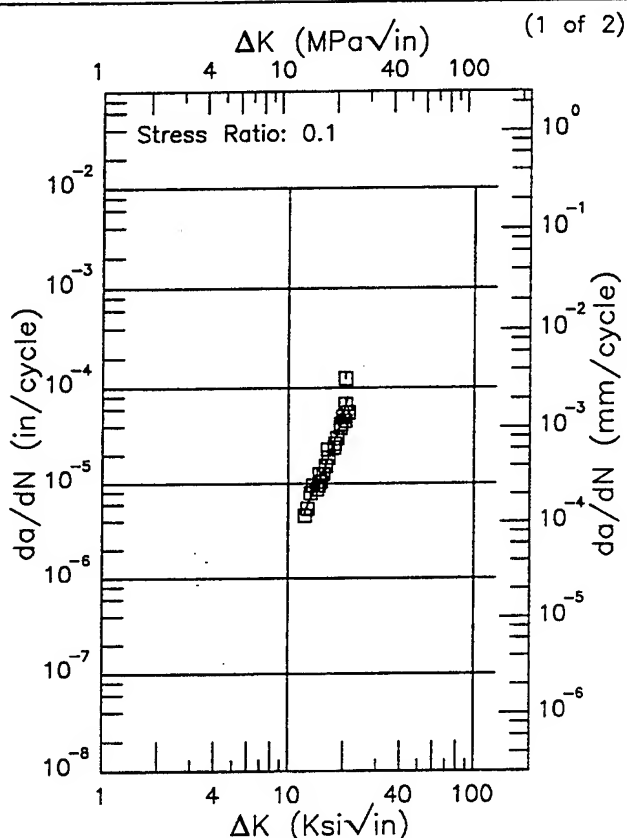


Figure 7.9.2.3.10

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R | 2124 |
 Condition/Ht: T851
 Form: 2 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 30 Hz
 Environment: DRY AIR; RT

Yield Strength: 66.4 ksi
 Ult. Strength: 72.1 ksi
 Specimen Thk: 1.5 in.
 Specimen Width: 2.55 in.
 Ref: UD005



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
12.27 (min)	4.86
13.	6.49
16.	15.8
20.	54.9
20.98 (max)	80.2

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
8.07 (min)	2.49
9.	3.72
10.	6.30
13.	44.1
13.67 (max)	109.

RMS %
 Error
 23.85

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error
 7.65

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.9.3.1.1

Condition/Ht: T851
Form: 2 in. Plate
Specimen Type: CT
Orientation: L-T
Frequency: 30 Hz
Environment: DRY AIR; RT

Yield Strength: 66.4 ksi
Ult. Strength: 72.1 ksi
Specimen Thk: 0.375 in.
Specimen Width: 2.55 in.
Ref: UD005

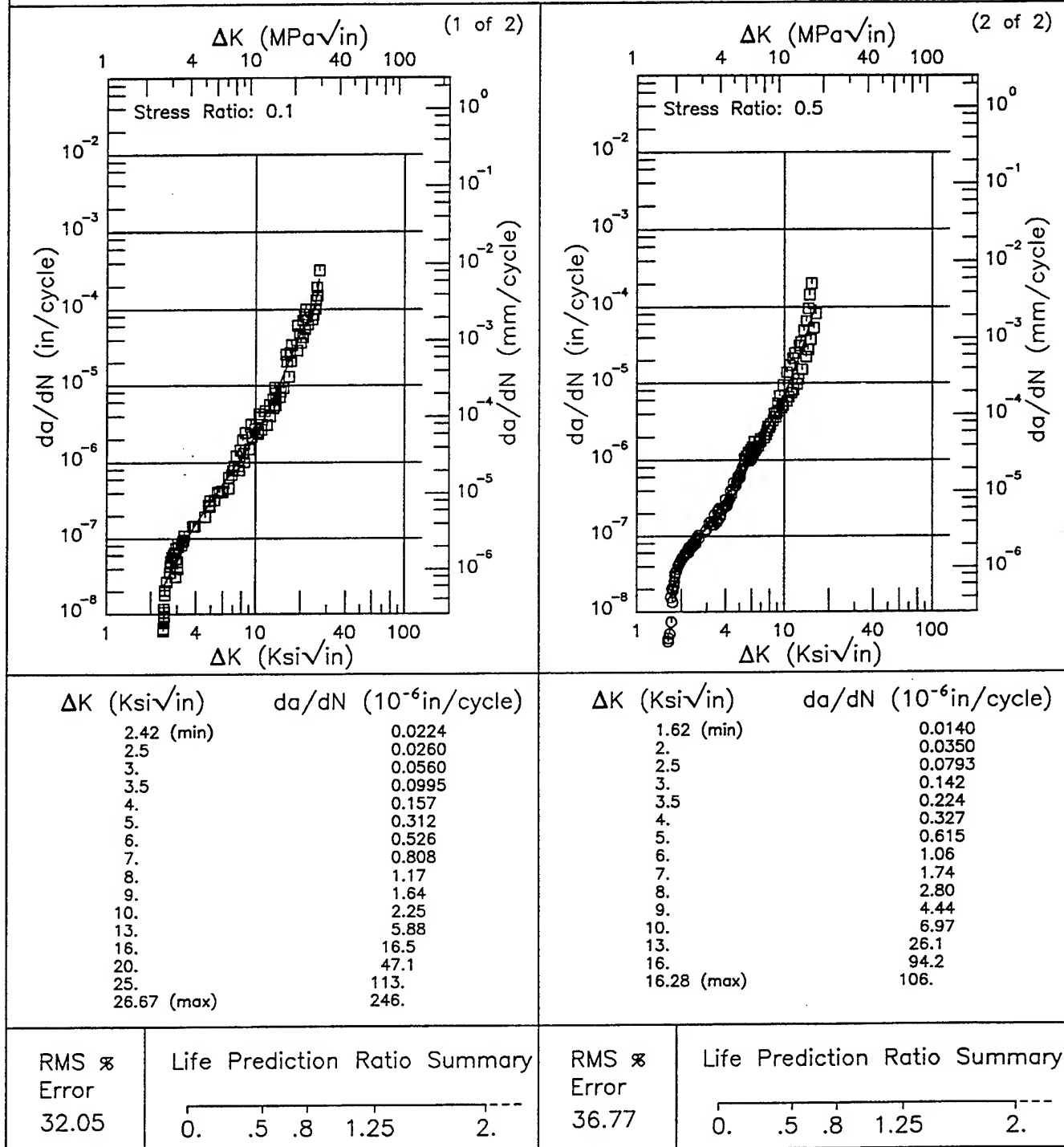


Figure 7.9.3.1.2

R 2124

Condition/Ht: T851
 Form: 2 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 30 Hz
 Environment: DRY AIR; RT

Yield Strength: 66.4 ksi
 Ult. Strength: 72.1 ksi
 Specimen Thk: 0.75 in.
 Specimen Width: 2.55 in.
 Ref: UD005

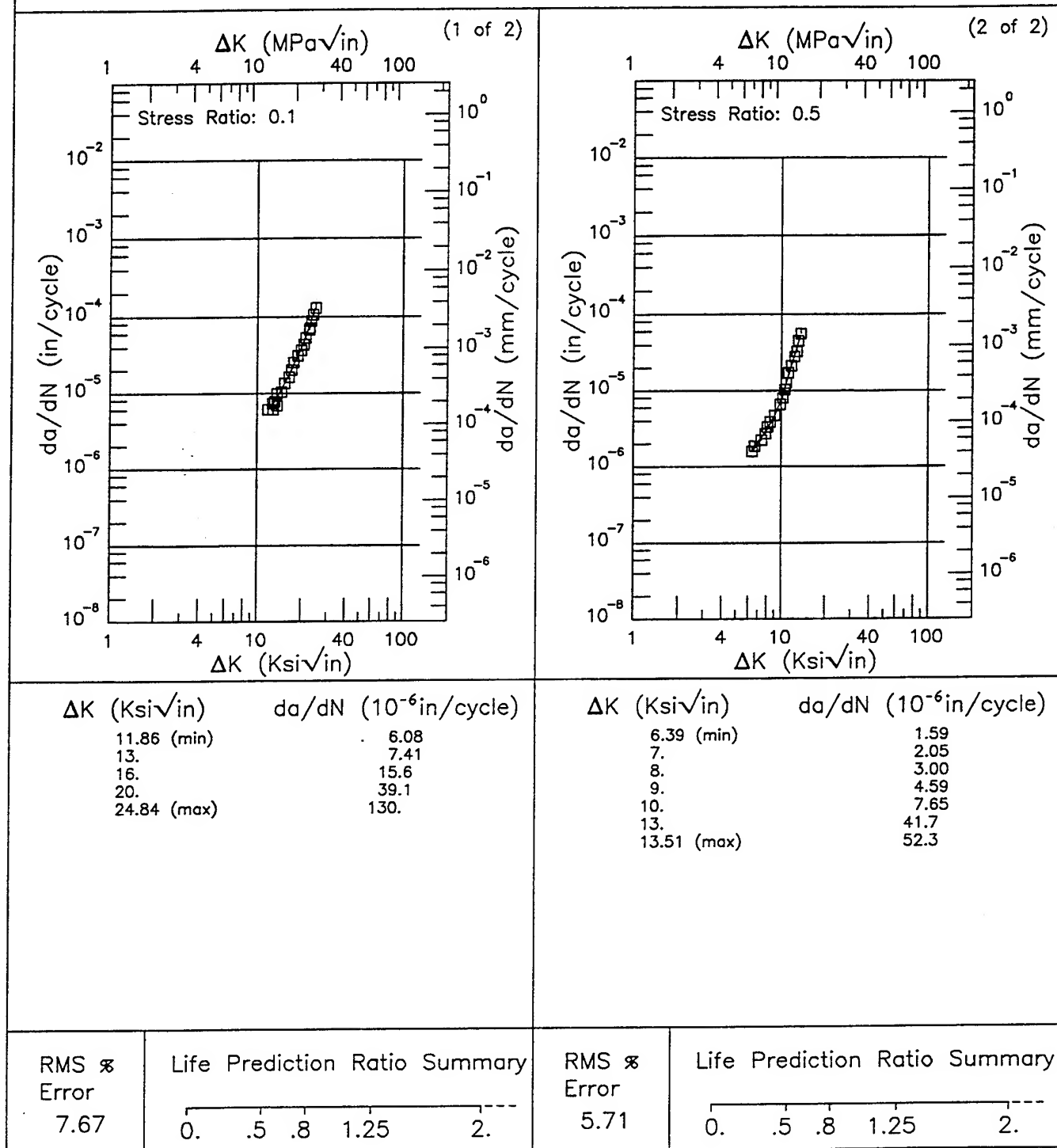


Figure 7.9.3.1.3

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R

2124

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 62.6 ksi
 Ult. Strength: 69.4 ksi
 Specimen Thk: 0.744 - 0.75 in.
 Specimen Width: 5 in.
 Ref: GD003

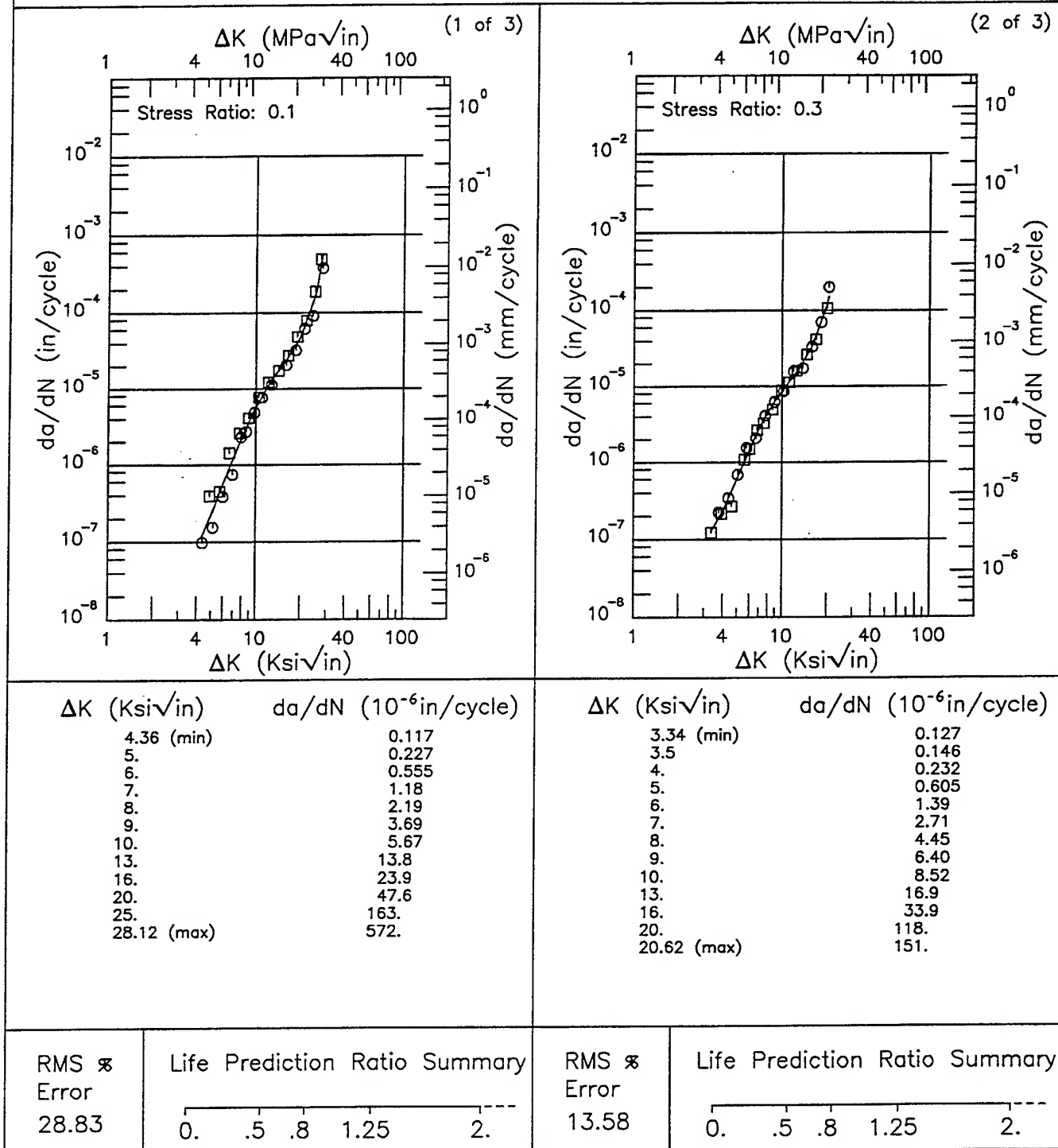


Figure 7.9.3.1.4

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 62.6 ksi
 Ult. Strength: 69.4 ksi
 Specimen Thk: 0.744 - 0.75 in.
 Specimen Width: 5 in.
 Ref: GD003

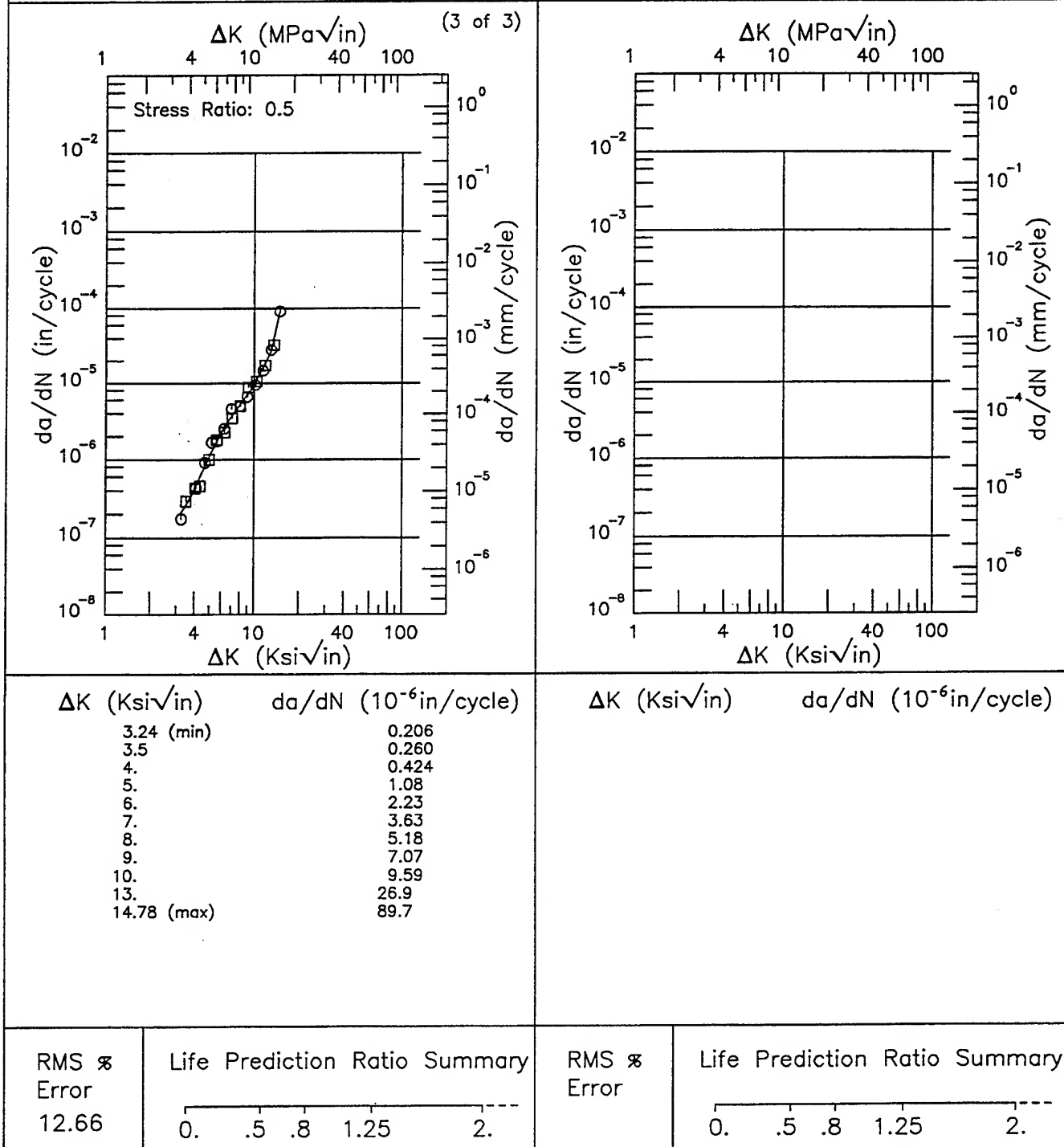


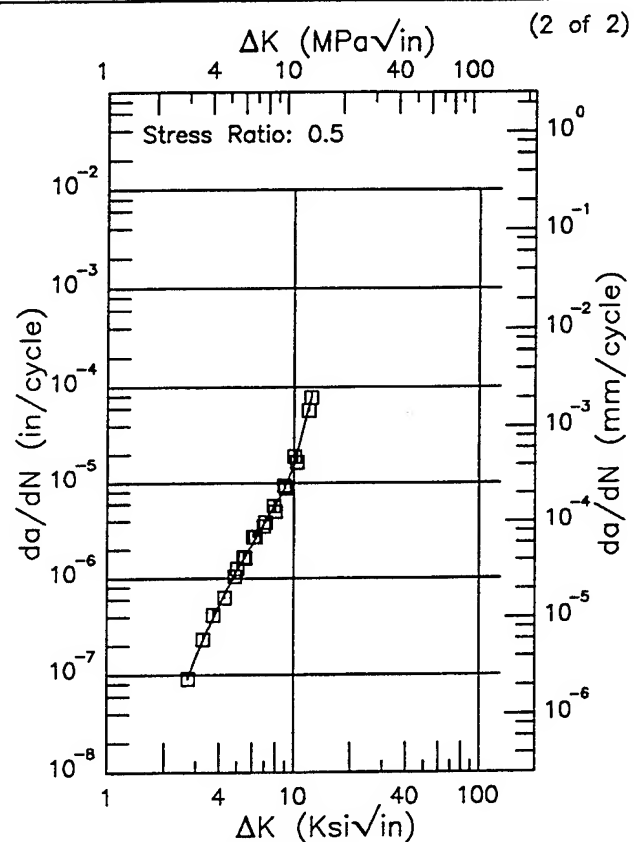
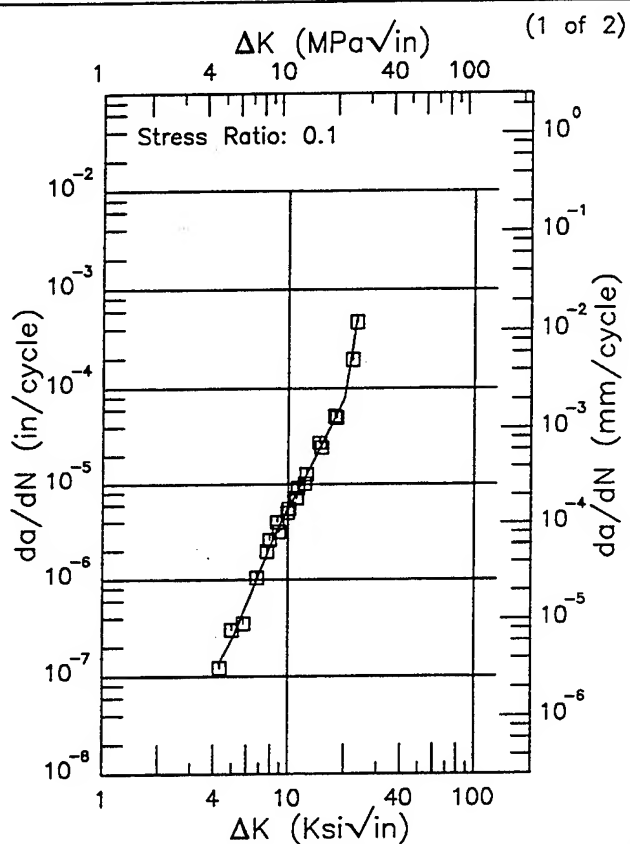
Figure 7.9.3.1.4 (Concluded)

R

2124

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 1 Hz
 Environment: H.H.A.; RT

Yield Strength: 61.9 ksi
 Ult. Strength: 69 ksi
 Specimen Thk: 0.75 - 0.751 in.
 Specimen Width: 5 in.
 Ref: GD003



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
4.28 (min)	0.135
5.	0.239
6.	0.550
7.	1.18
8.	2.24
9.	3.77
10.	5.65
13.	14.3
16.	33.6
20.	78.7
23.19 (max)	501.

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
2.71 (min)	0.0906
3.	0.152
3.5	0.306
4.	0.526
5.	1.20
6.	2.27
7.	3.81
8.	5.89
9.	9.06
10.	15.3
12.38 (max)	80.8

RMS %
 Error
 13.66

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error
 7.66

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.9.3.1.5

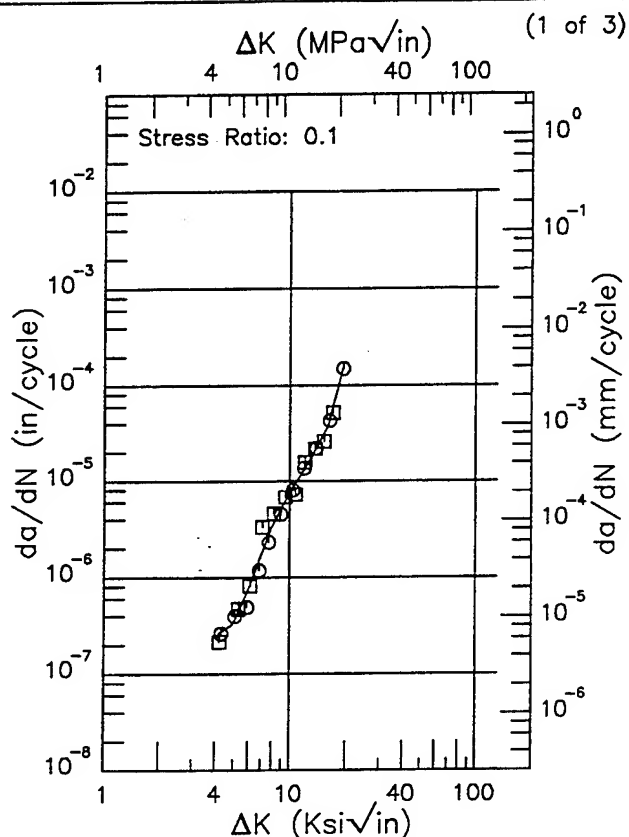
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R

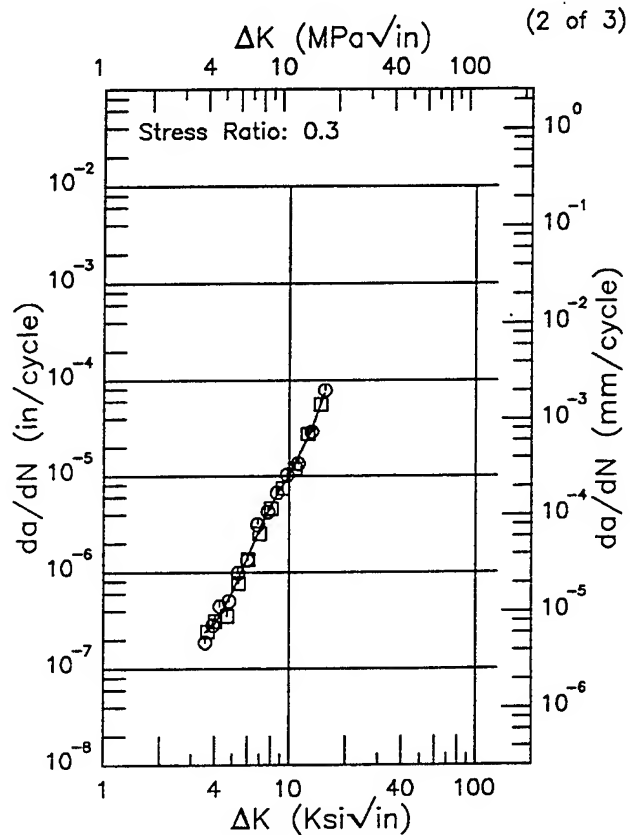
2124

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 61.9 ksi
 Ult. Strength: 69 ksi
 Specimen Thk: 0.748 - 0.752 in.
 Specimen Width: 5 in.
 Ref: GD003



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.18 (min)	0.264
5.	0.337
6.	0.746
7.	1.72
8.	3.35
9.	5.31
10.	7.45
13.	17.2
16.	37.5
19.20 (max)	149.



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
3.55 (min)	0.241
4.	0.293
5.	0.626
6.	1.42
7.	2.82
8.	4.85
9.	7.39
10.	10.3
13.	29.0
15.42 (max)	74.1

RMS %
 Error
 21.92

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error
 12.67

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.9.3.1.6

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 61.9 ksi
 Ult. Strength: 69 ksi
 Specimen Thk: 0.748 - 0.752 in.
 Specimen Width: 5 in.
 Ref: GD003

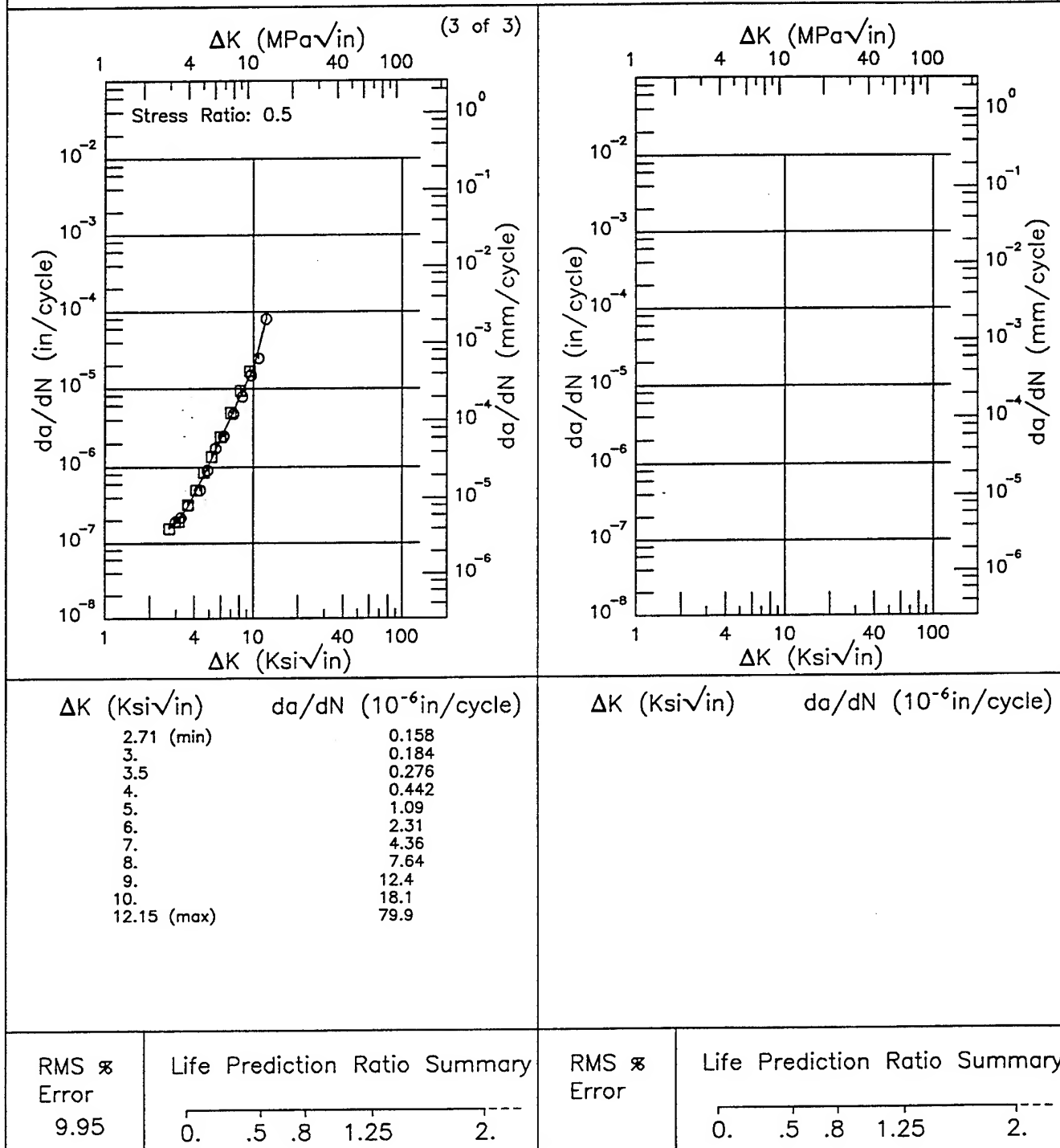
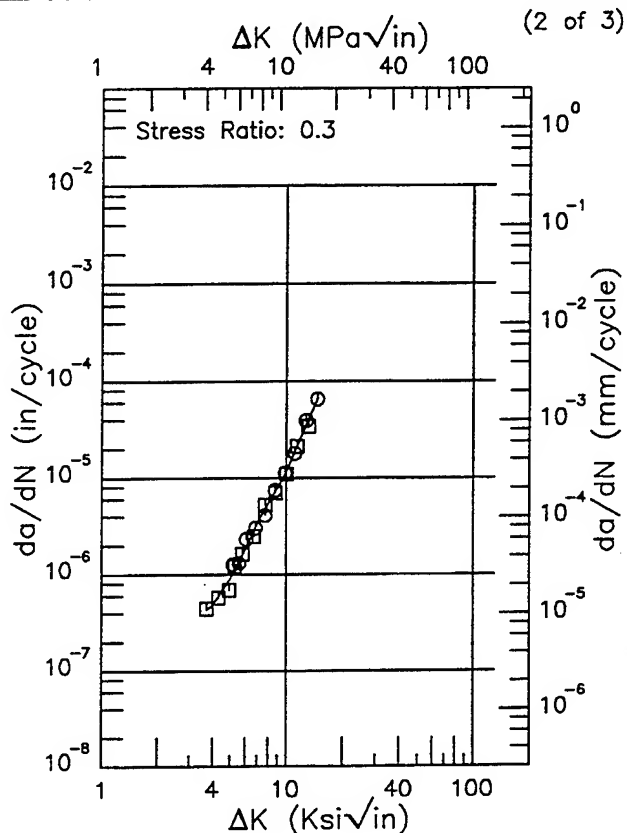
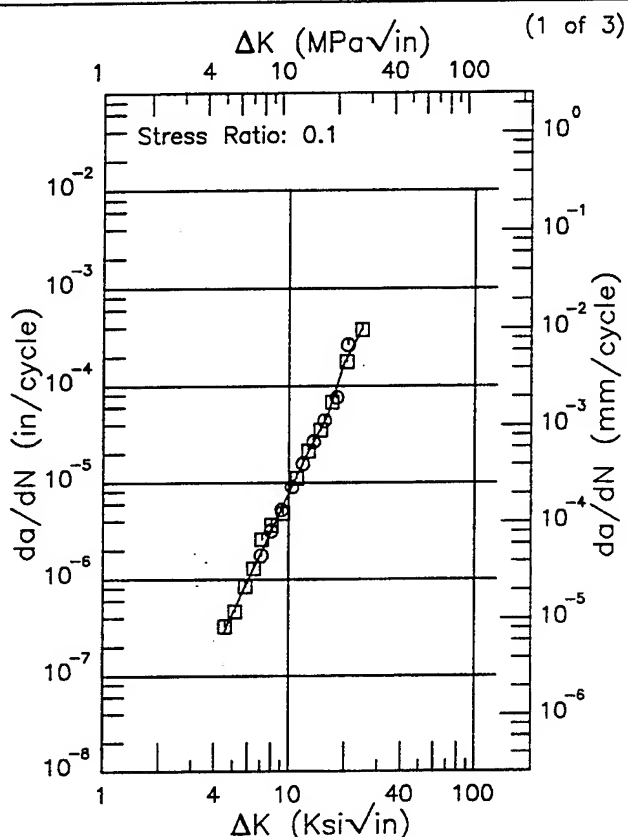


Figure 7.9.3.1.6 (Concluded)

R 2124 |
 Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CT
 Orientation: S-L
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 59.1 ksi
 Ult. Strength: 63.1 ksi
 Specimen Thk: 0.495 - 0.501 in.
 Specimen Width: 3.99 - 4 in.
 Ref: GD003



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.52 (min)	0.288
5.	0.443
6.	0.951
7.	1.80
8.	3.11
9.	5.05
10.	7.82
13.	22.6
16.	47.9
20.	182.
24.53 (max)	378.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
3.72 (min)	0.433
4.	0.480
5.	0.893
6.	1.81
7.	3.33
8.	5.37
9.	7.96
10.	11.6
13.	38.1
14.61 (max)	62.8

RMS %
 Error
 11.80

Life Prediction Ratio Summary
 0. .5 .8 1.25 2.---

RMS %
 Error
 10.87

Life Prediction Ratio Summary
 0. .5 .8 1.25 2.---

Figure 7.9.3.1.7

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CT
 Orientation: S-L
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 59.1 ksi
 Ult. Strength: 63.1 ksi
 Specimen Thk: 0.495 - 0.501 in.
 Specimen Width: 3.99 - 4 in.
 Ref: GD003

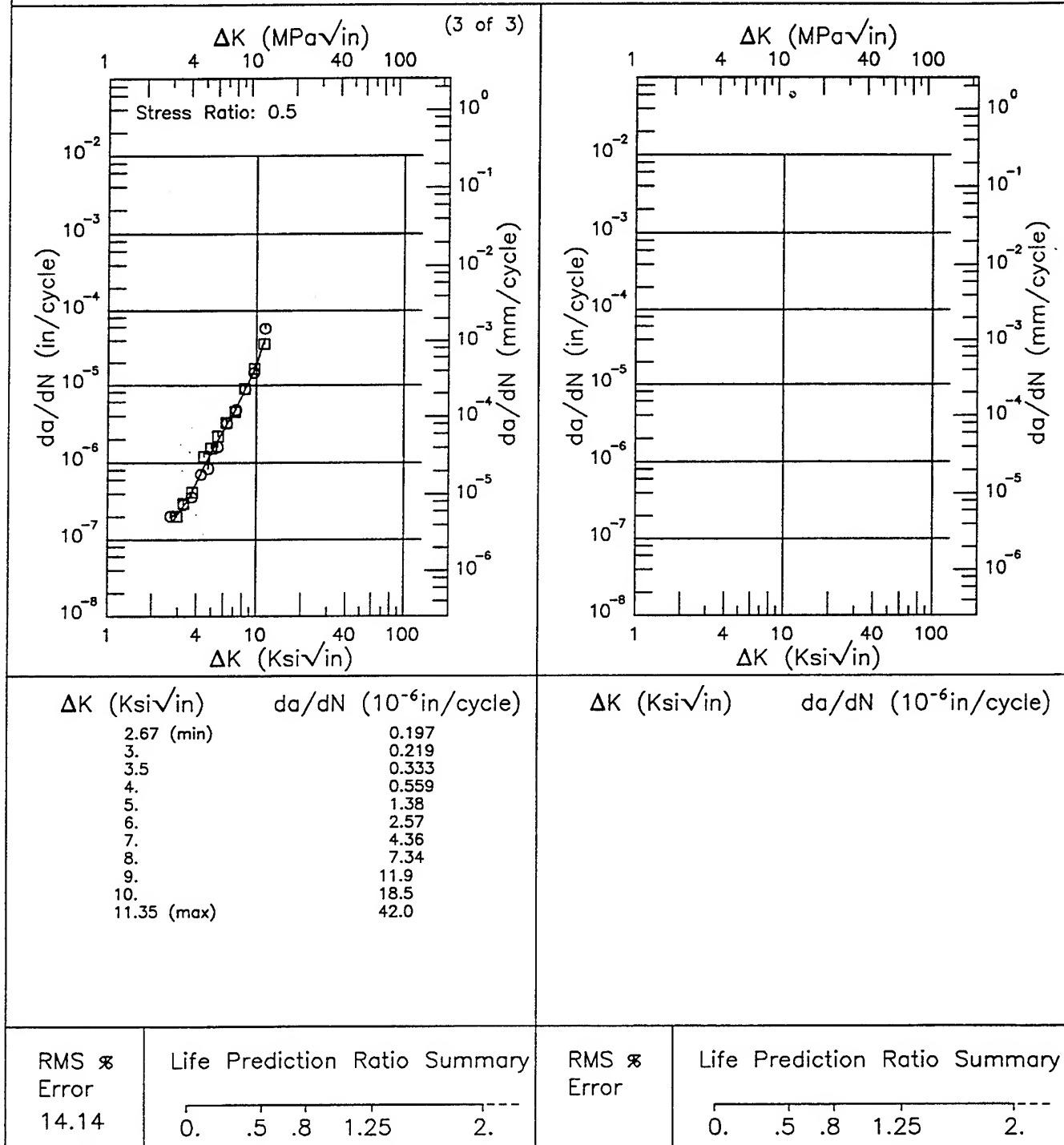


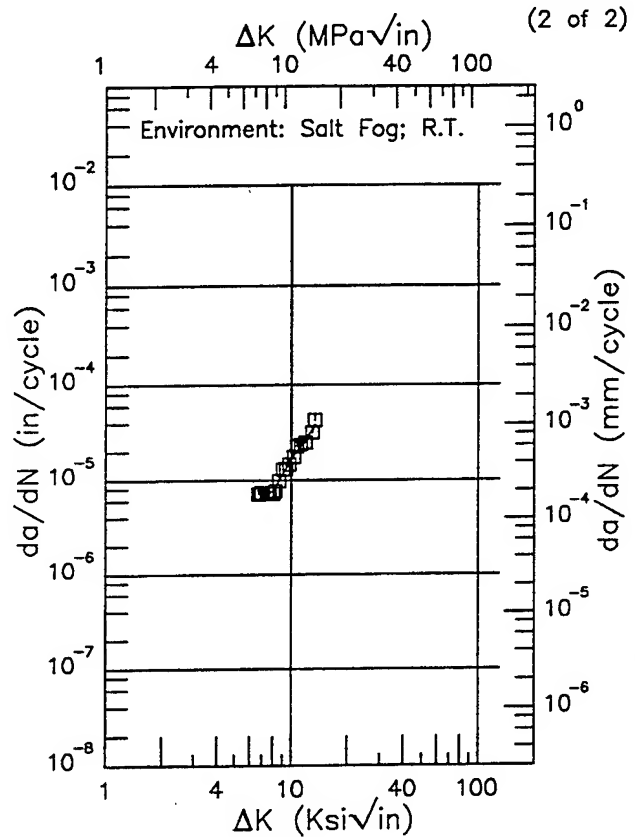
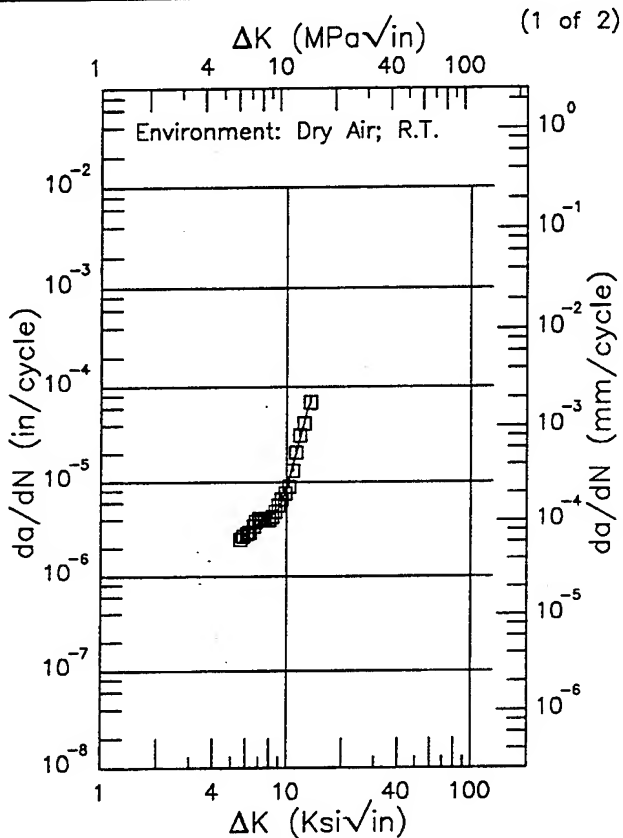
Figure 7.9.3.1.7 (Concluded)

2124

E

Condition/Ht: T851
Form: 4.5 in. Plate
Specimen Type: CT
Orientation: S-L
Stress Ratio: 0.33
Frequency: 18.3 Hz

Yield Strength: 57.3 ksi
Ult. Strength: 64.1 ksi
Specimen Thk: 1.489 - 1.491 in.
Specimen Width: 3.8 in.
Ref: 86842



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.61 (min)	2.38
6.	2.81
7.	3.70
8.	4.27
9.	5.26
10.	8.55
13.	59.0
13.38 (max)	67.4

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.69 (min)	7.77
7.	6.94
8.	7.70
9.	11.5
10.	16.9
13.	34.0
13.38 (max)	38.4

RMS %
Error
5.90

Life Prediction Ratio Summary

RMS %
Error
6.87

Life Prediction Ratio Summary

Figure 7.9.3.1.8

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency:
 Environment: H.H.A.; RT

Yield Strength: 57 ksi
 Ult. Strength:
 Specimen Thk: 0.5 in.
 Specimen Width: 6 in.
 Ref: BL002

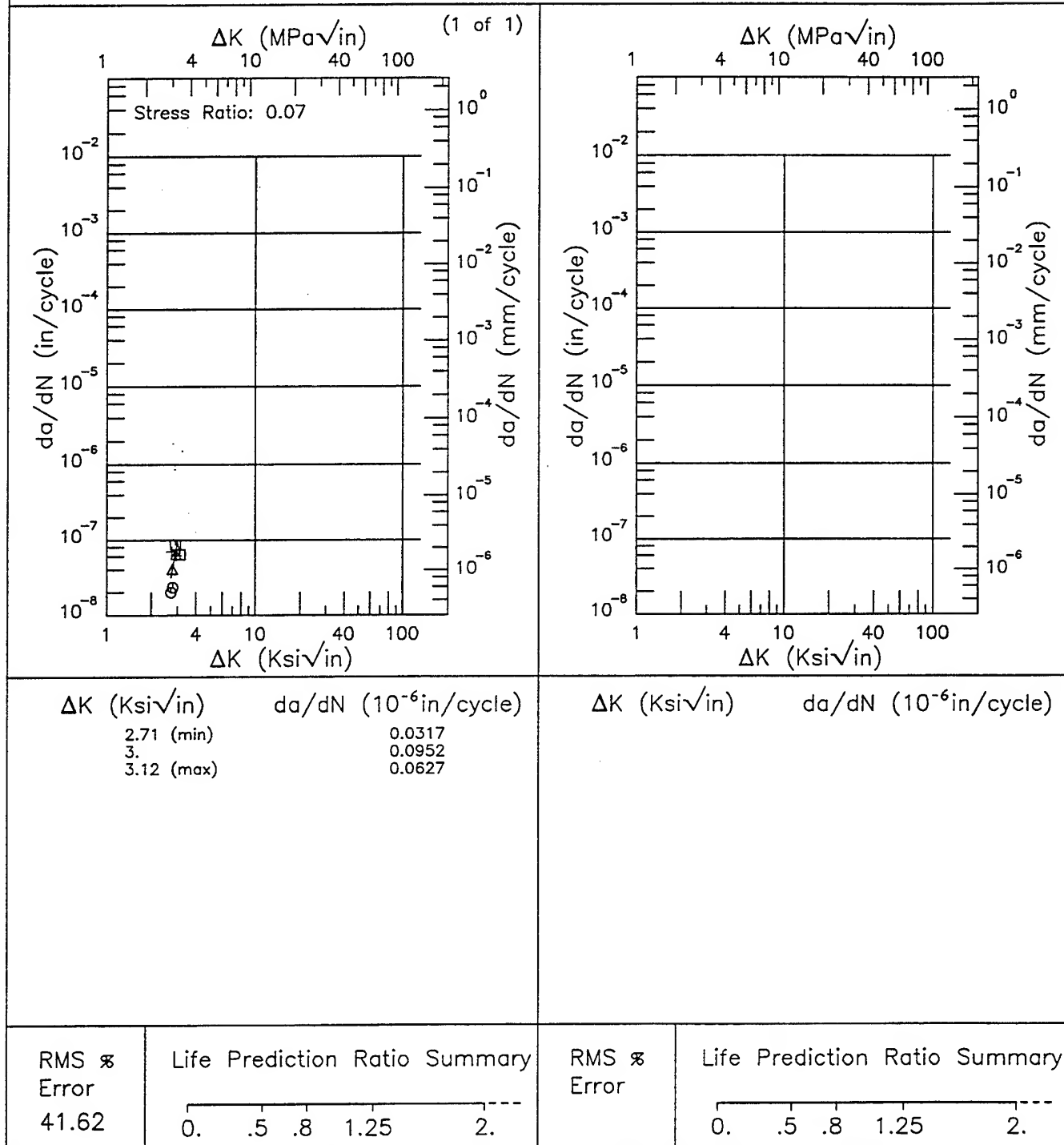
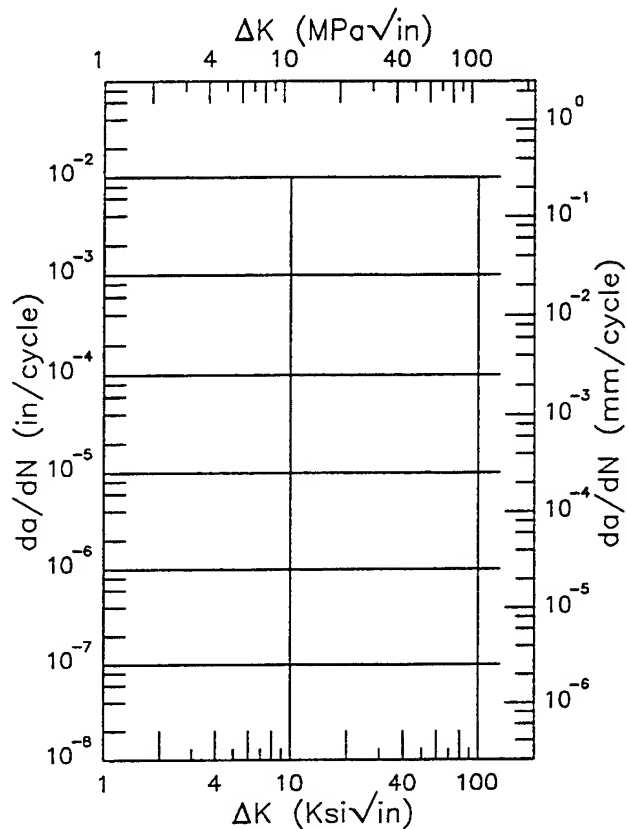
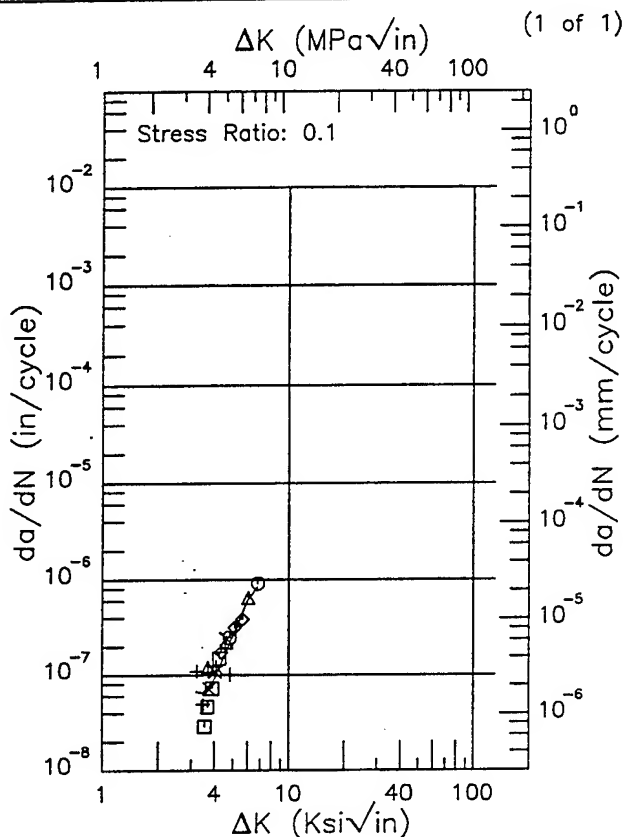


Figure 7.9.3.1.9

R 2124

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 10 - 33 Hz
 Environment: H.H.A.; RT

Yield Strength: 63.2 ksi
 Ult. Strength:
 Specimen Thk: 0.5 in.
 Specimen Width: 6 in.
 Ref: BL002



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
3.20 (min)	0.0668
3.5	0.0648
4.	0.0891
5.	0.258
6.	0.610
6.78 (max)	0.847

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

RMS %
 Error
 33.02

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.9.3.1.10

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 10 - 33 Hz
 Environment: H.H.A.; RT

Yield Strength: 63.2 ksi
 Ult. Strength:
 Specimen Thk: 0.5 in.
 Specimen Width: 4 in.
 Ref: BL002

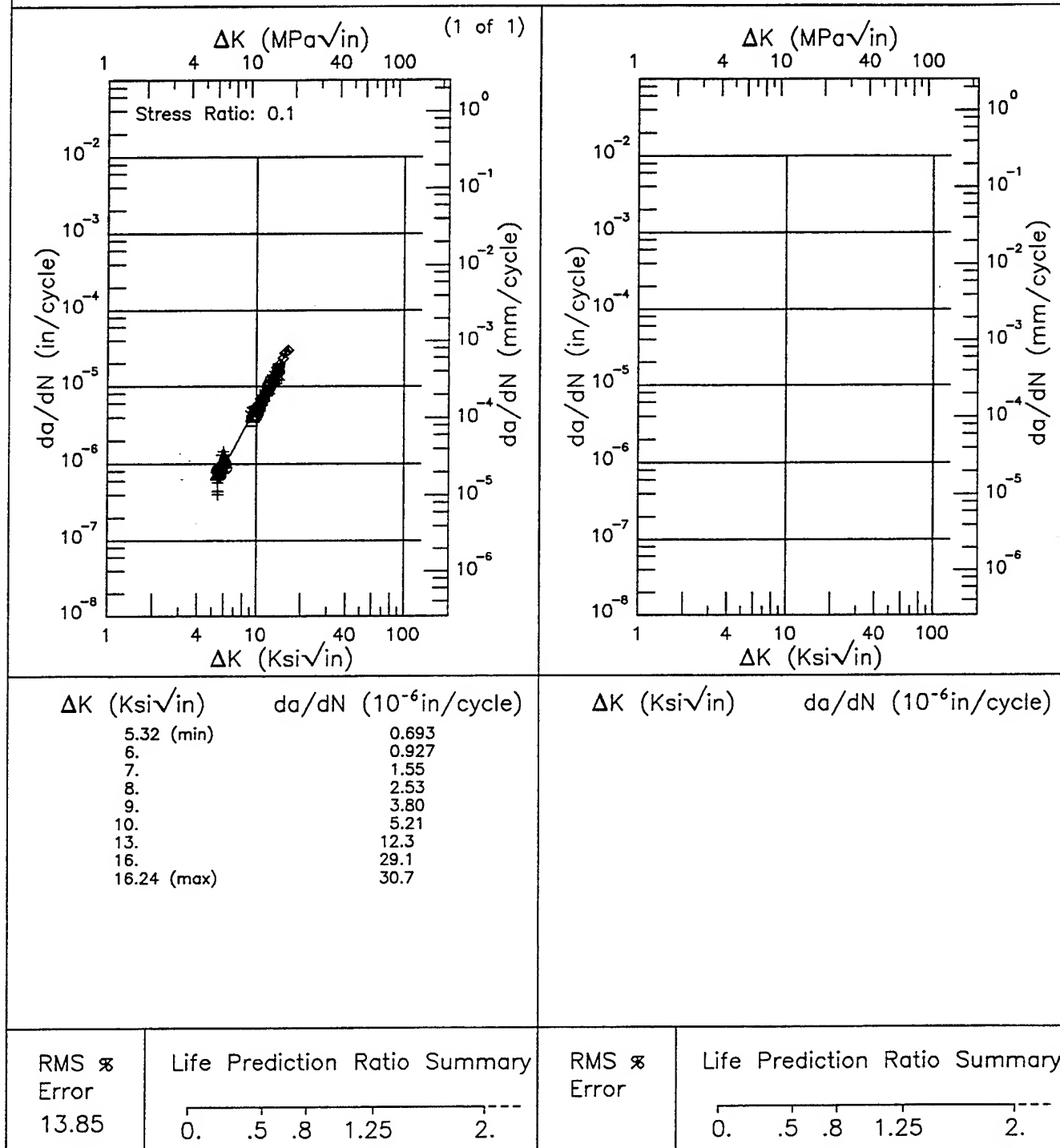


Figure 7.9.3.1.11

R 2124

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 6 - 33 Hz
 Environment: H.H.A.; RT

Yield Strength: 63.2 ksi
 Ult. Strength:
 Specimen Thk: 0.5 in.
 Specimen Width: 4 in.
 Ref: BL002

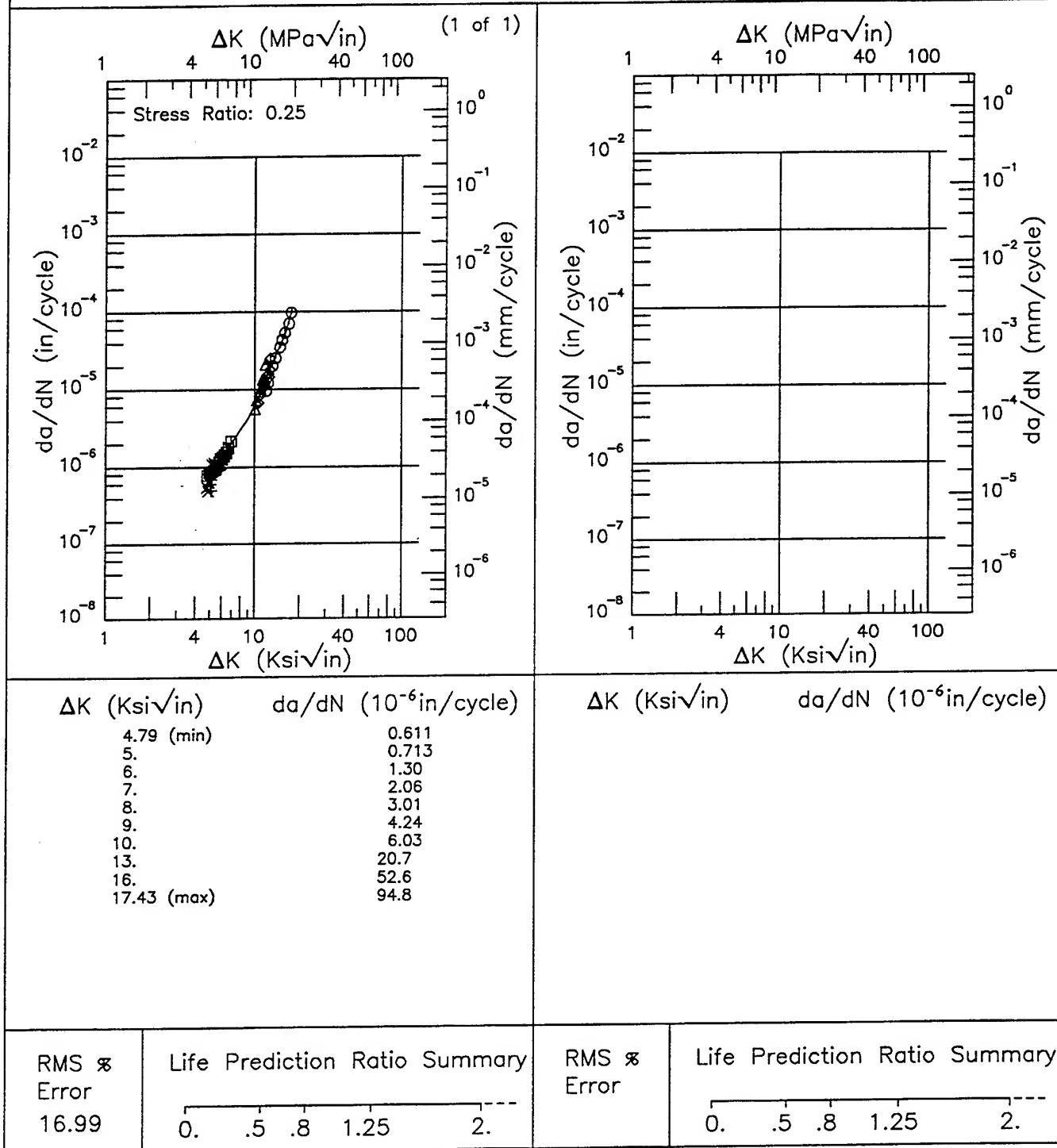


Figure 7.9.3.1.12

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 6 - 33 Hz
 Environment: H.H.A.; RT

Yield Strength: 63.2 ksi
 Ult. Strength:
 Specimen Thk: 0.5 in.
 Specimen Width: 6 in.
 Ref: BL002

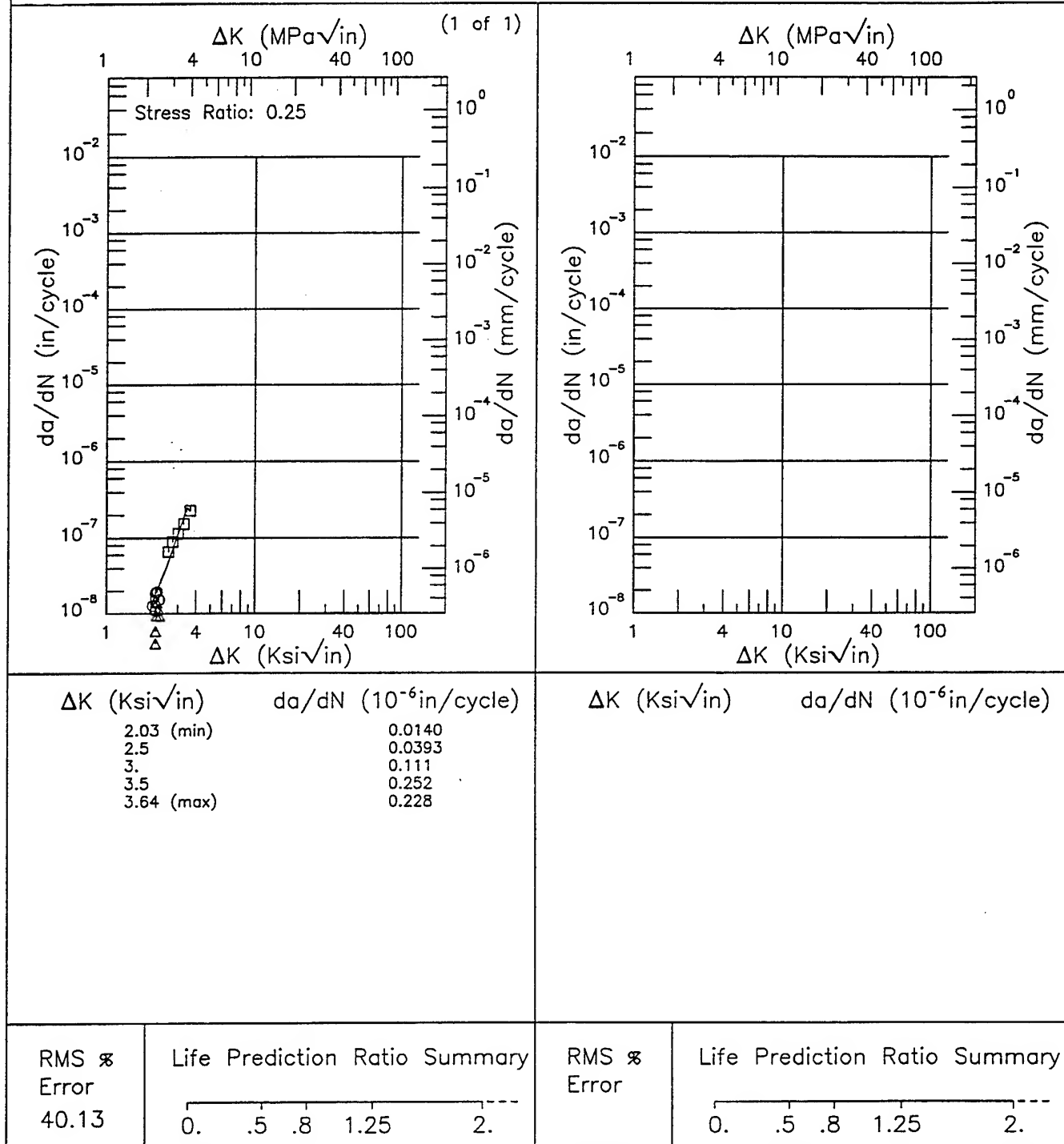
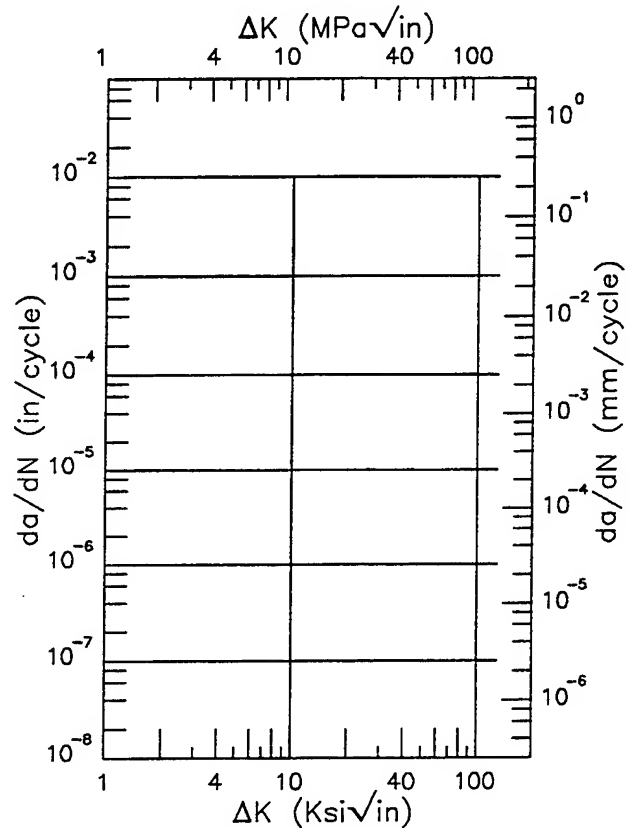
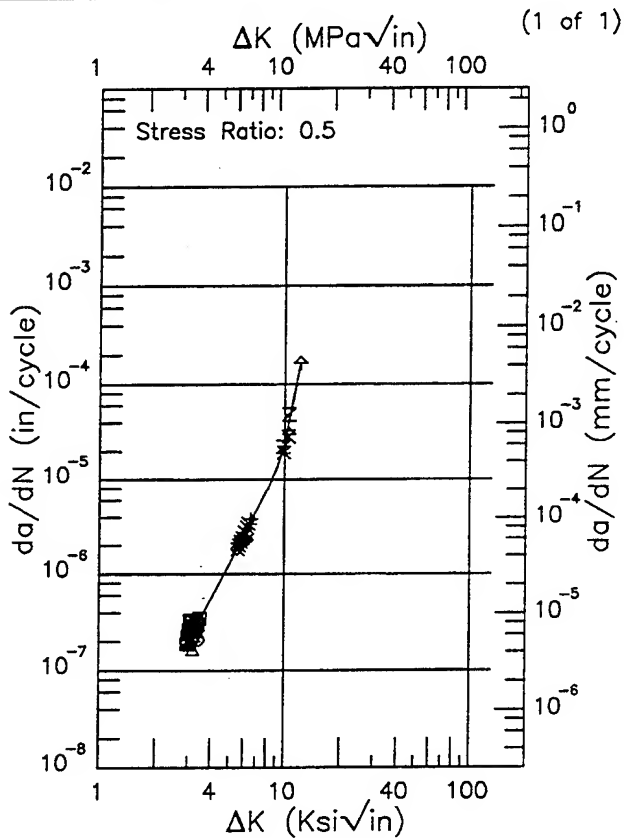


Figure 7.9.3.1.13

R | 2124 |

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 8 - 33 Hz
 Environment: H.H.A.; RT

Yield Strength: 63.2 - 67.2 ksi
 Ult. Strength:
 Specimen Thk: 0.5 in.
 Specimen Width: 4 in.
 Ref: BL002



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
2.94 (min)	0.205
3.	0.217
3.5	0.343
4.	0.541
5.	1.25
6.	2.55
7.	4.65
8.	7.71
9.	12.8
10.	23.9
12.09 (max)	157.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
--------------------------------------	-------------------------------

RMS %
 Error
 14.40

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.9.3.1.14

Condition/Ht: T851
 Form: 5.5 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: T-L
 Frequency: 8 - 33 Hz
 Environment: H.H.A.; RT

Yield Strength: 63.2 ksi
 Ult. Strength:
 Specimen Thk: 0.5 in.
 Specimen Width: 6 in.
 Ref: BL002

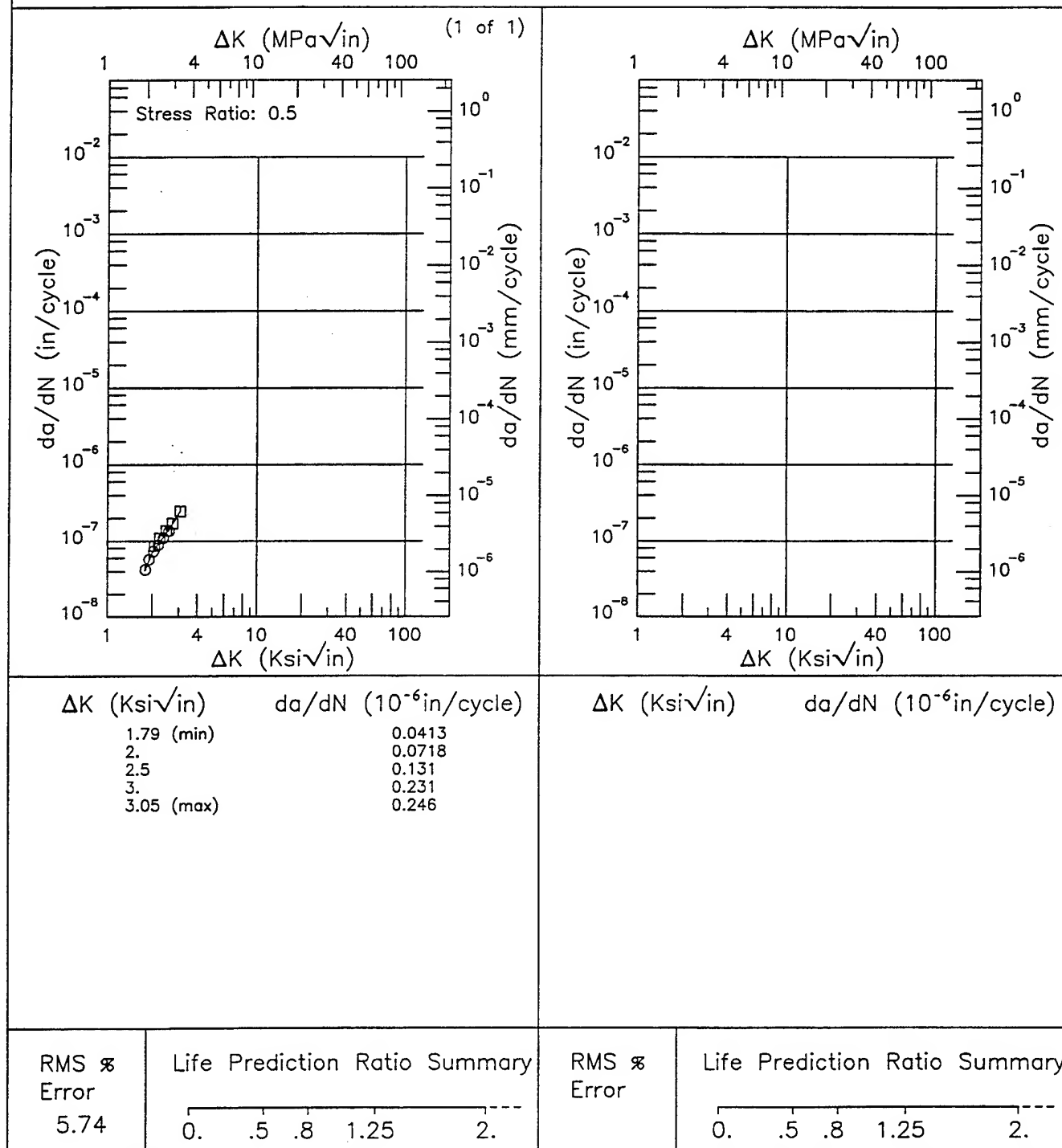
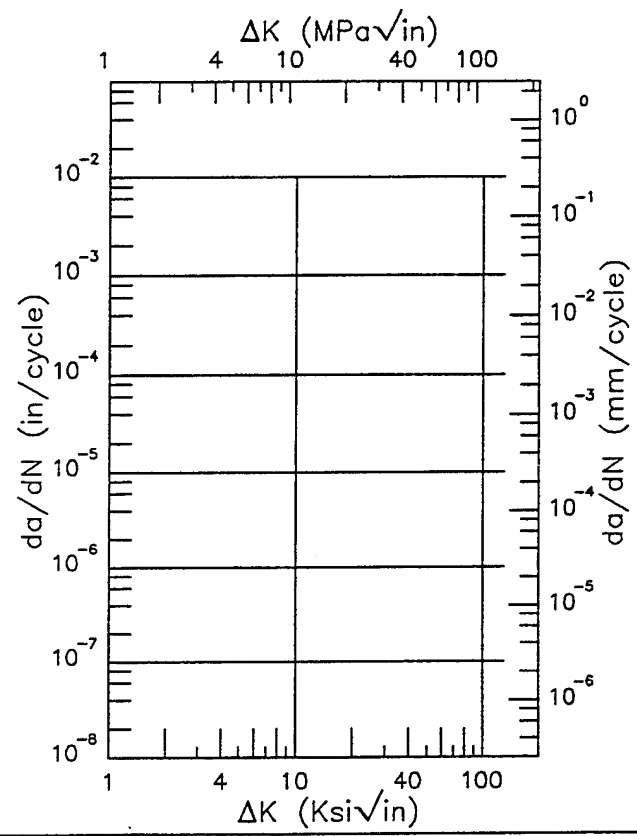
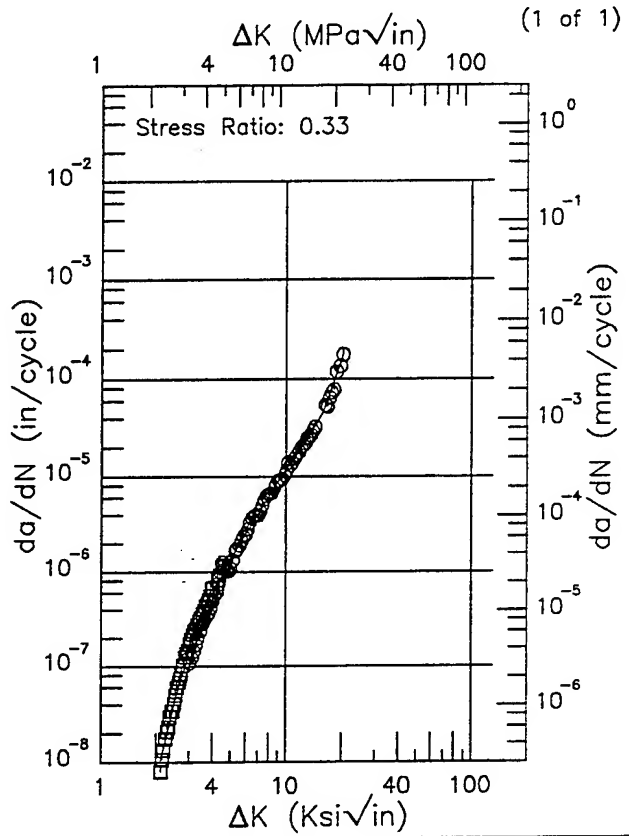


Figure 7.9.3.1.15

R 2124

Condition/Ht: T851
 Form: 1.5 in. Plate
 Specimen Type: WOL
 Orientation: L-T
 Frequency: 25 Hz
 Environment: H.H.A.; RT

Yield Strength: 66 ksi
 Ult. Strength: 71 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 2.55 in.
 Ref: NC003



ΔK (Ksi√in)	da/dN (10 ⁻⁶ in/cycle)
2.11 (min)	0.0104
2.5	0.0419
3.	0.140
3.5	0.322
4.	0.589
5.	1.37
6.	2.48
7.	4.02
8.	6.13
9.	8.81
10.	12.0
13.	24.0
16.	48.1
20.	163.
20.19 (max)	173.

ΔK (Ksi√in) da/dN (10⁻⁶in/cycle)

RMS % Error	Life Prediction Ratio Summary
12.83	0. .5 .8 1.25 2.---

RMS % Error	Life Prediction Ratio Summary
	0. .5 .8 1.25 2.---

Figure 7.9.3.1.16

TABLE 7.9.3.3

(1 of 1)

K_{Isec} SUMMARY FOR ALUMINUM ALLOY 2124

Condition/Ht	Prod Form	Test Temp (°F)	Spec Or.	Yield Str (Ksi)	Envir.	Specimen			Crack (in)	K _Q (Ksi√in)	K _{Isec} (Ksi√in)	Test Time (min)	Test Date	Reference
						Thick (in)	Design	Width (in)						
T851	P	R.T.	L-T	65	S.T.W.	1	DCB	5.5	---	41	27.8	70320	1976	RI006
						1	DCB	5.5	---	41	26.7	70320	1976	RI006
						1	DCB	5.5	---	41	>26	60300	1976	RI006
						1	DCB	5.5	---	41	25.2	54360	1976	RI006
			S-L	63	S.T.W.	1	DCB	5.5	---	40	>25	51720	1976	RI006
						1	DCB	5.5	---	40	21	54360	1976	RI006
						1	DCB	5.5	---	40	26	130620	1976	RI006
						1	DCB	5.5	---	40	21	54360	1976	RI006

TABLE 7.10.1.1
 MEAN PLANE STRAIN FRACTURE TOUGHNESS
 FOR ALUMINUM 2000/6000 SERIES ALLOY 2214 AT ROOM TEMPERATURE

Product Form	Condition/Heat Treatment	K_{Ic} (ksi \sqrt{in})							
		Specimen Orientation							
		L-T			T-L			S-L	
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	n
Plate	T651	35.3	2.7	11	31.8	0.9	10	...	...
	T651 (417)	36.	3.4	10	29.4	1.8	15	26.6	2

TABLE 7.10.2.1

1 of 4

ALUMINUM 2214 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T651	Plate	1.75	R.T.	L-T	64.1	2.000	1.002	NB	0.963	0.75	35.10	35.3	2.7	1973	86213
		1.75			64.1	2.000	1.002	NB	1.007	0.70	33.90			1973	86213
		1.75			64.1	2.000	1.001	NB	0.955	0.70	34.00			1973	86213
		1.75			64.3	2.000	1.002	NB	0.935	0.65	32.80			1973	86213
		1.75			64.3	2.000	1.002	NB	0.955	0.63	32.40			1973	86213
		1.75			64.3	2.000	1.002	NB	0.942	0.60	31.50			1973	86213
		1.50			66.0	3.000	1.500	CT	1.638	0.80	37.30			1973	86213
		1.50			66.0	3.000	1.500	CT	1.606	0.83	38.00			1973	86213
		2.37			66.2	4.000	1.999	CT	1.977	0.70	35.00			1973	86213
		1.50			66.4	3.000	1.499	CT	1.628	0.84	38.50			1973	86213
		1.50			66.4	3.000	1.500	CT	1.602	0.90	39.90			1973	86213
		1.75			63.1	2.000	1.002	NB	0.985	0.67	32.70			1973	86213
T651	Plate	1.75	R.T.	T-L	63.1	2.000	1.001	NB	0.955	0.65	32.20	31.8	0.9	1973	86213
		1.75			63.1	2.000	1.001	NB	1.048	0.67	32.60			1973	86213
		1.75			63.2	2.000	1.001	NB	0.967	0.57	30.30			1973	86213
		1.75			63.2	2.000	1.002	NB	1.033	0.64	32.00			1973	86213
		1.75			63.2	2.000	1.001	NB	1.035	0.62	31.40			1973	86213
		1.50			64.9	3.000	1.500	CT	1.576	0.58	31.20			1973	86213
		1.50			64.9	3.000	1.499	CT	1.567	0.56	30.60			1973	86213
		1.50			65.2	3.000	1.500	CT	1.597	0.64	32.90			1973	86213
		1.50			65.2	3.000	1.500	CT	1.589	0.60	31.90			1973	86213

TABLE 7.10.2.1 (CONTINUED)

ALUMINUM 2214 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 * (K _{1c} /T _{YS}) ^a	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T651	Plate	1.50	84	S-L	62.7	1.000	0.500	CT	0.483	0.33	22.90	24.0	1.1	1973	86213
		1.50			62.7	1.000	0.500	CT	0.495	0.39	24.90			1973	86213
		1.50			64.6	0.990	0.500	CT	0.492	0.33	23.30			1973	86213
		1.50			64.6	1.000	0.500	CT	0.485	0.37	25.00			1973	86213
T651 (417)	Plate	2.00	R.T.	L-T	63.9	3.000	1.500	CT	1.560	0.85	37.20	36.0	3.4	1973	86213
		2.00			63.9	3.000	1.500	CT	1.586	0.89	38.20			1973	86213
		3.00			64.8	3.000	1.500	CT	1.584	0.79	36.50			1973	86213
		1.75			64.9	3.000	1.501	CT	1.533	1.15	44.10			1973	86213
		2.37			66.2	4.000	1.998	CT	2.046	0.71	35.30			1973	86213
		2.25			66.3	4.000	1.998	CT	2.123	0.68	34.70			1973	86213
		3.93			66.3	3.000	1.500	CT	1.464	0.85	33.80			1973	86213
		2.25			66.3	4.000	1.998	CT	2.021	0.67	34.40			1973	86213
		3.93			66.3	3.000	1.501	CT	1.444	0.60	32.60			1973	86213
		2.25			66.5	4.000	1.998	CT	2.047	0.62	33.00			1973	86213
		3.00			62.6	3.000	1.500	CT	1.540	0.49	27.70	1973	86213		
		3.00			62.6	3.000	1.501	CT	1.549	0.53	28.90	1973	86213		
T651 (417)	Plate	2.00	R.T.	T-L	63.2	3.000	1.501	CT	1.592	0.57	30.10	28.4	1.8	1973	86213
		2.00			63.2	3.000	1.501	CT	1.568	0.55	29.60			1973	86213
		1.50			63.6	3.000	1.501	CT	1.598	0.58	30.60			1973	86213
		1.50			63.6	3.000	1.491	CT	1.606	0.62	31.60			1973	86213
		2.25			64.2	4.010	1.999	CT	2.122	0.47	27.90			1973	86213
		1.75			64.2	3.000	1.500	CT	1.623	0.63	32.30			1973	86213
		2.25			64.2	4.000	1.999	CT	2.141	0.43	26.60			1973	86213
		2.25			64.2	4.000	1.999	CT	2.141	0.43	26.60			1973	86213

TABLE 7.10.2.1 (CONTINUED)

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2214

ALUMINUM 2214 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K ₀₁)	SPECIMEN			CRACK LENGTH (in.) A	3.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K ₀₁ /in.)	K _{1c} MEAN	STAN DEV		
T651 (417) Cont'd	Plate Cont'd	2.25	R.T. Cont'd	T-L Cont'd	64.2	4.000	1.989	CT	2.126	0.46	27.40	Cont'd	Cont'd	1973	86213
		2.25			64.2	4.000	1.998	CT	2.179	0.48	28.00			1973	86213
		2.37			64.7	4.000	1.999	CT	2.093	0.48	28.40			1973	86213
		2.37			64.7	4.000	1.998	CT	2.150	0.48	28.40			1973	86213
		3.93			64.9	3.000	1.501	CT	1.484	0.58	31.30			1973	86213
		3.93			64.9	3.000	1.500	CT	1.484	0.60	31.70			1973	86213
		3.00			59.8	2.000	1.001	CT	0.962	0.45	25.30			1973	86213
		3.93			61.0	3.000	1.500	CT	1.532	0.52	27.90			1973	86213
T651 (417)	Plate	1.50	R.T.	S-L	59.2	1.000	0.499	CT	0.486	0.41	24.00	22.8	1.3	1973	86213
		1.50			59.2	1.000	0.500	CT	0.486	0.39	23.30			1973	86213
		3.00			59.8	1.000	0.500	CT	0.490	0.32	21.30			1973	86213
		3.00			59.8	1.000	0.498	CT	0.491	0.32	21.30			1973	86213
		1.50			60.0	1.000	0.500	CT	0.479	0.35	22.60			1973	86213
		2.00			60.0	1.000	0.501	CT	0.474	0.29	20.50			1973	86213
		1.75			60.0	1.000	0.499	CT	0.480	0.34	22.00			1973	86213
		1.50			60.0	1.000	0.500	CT	0.490	0.38	23.50			1973	86213
		2.00			60.0	1.000	0.501	CT	0.477	0.38	23.40			1973	86213
		2.00			60.2	1.000	0.500	CT	0.479	0.39	23.70			1973	86213
		1.75			61.1	1.000	0.501	CT	0.475	0.39	24.00			1973	86213
		1.75			61.1	1.000	0.499	CT	0.471	0.40	24.50			1973	86213

TABLE 7.10.2.1 (CONCLUDED)

ALUMINUM 2214 K _{Ic}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{Ic} TYS) (in.)	K _{Ic}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{Ic} (Ksi/in.)	K _{Ic} MEAN	STAN DEV		
T651 (417)	Plate	2.25	84	S-L	63.4	1.500	0.749	CT	0.757	0.37	24.40	23.7	1.5	1973	86213
		2.25			63.4	1.500	0.749	CT	0.770	0.37	24.30			1973	86213
		2.37			64.5	1.500	0.750	CT	0.782	0.29	22.00			1973	86213
		2.37			64.5	1.500	0.749	CT	0.794	0.41	26.00			1973	86213
		2.25			65.3	1.500	0.750	CT	0.739	0.29	22.30			1973	86213
		2.25			65.3	1.500	0.750	CT	0.799	0.31	23.00			1973	86213

TABLE 7.11.1.1
MEAN PLANE STRAIN FRACTURE TOUGHNESS
FOR ALUMINUM 2000/6000 SERIES ALLOY 2219 AT ROOM TEMPERATURE

Product Form	Condition/Heat Treatment	K_{Ic} (ksi \sqrt{in})									
		Specimen Orientation									
		L-T			T-L			S-L			
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	
Plate	T851	33.4	2.3	48	29.7	3.2	78	23.	2.4	14	
	T87	28.	3.	6	22.	0.4	2	---	---	---	
	T87-300F 100HRS	34.8	0.4	2	---	---	---	---	---	---	
Forging	T851	---	---	---	---	---	---	25.6	3.1	85	
	T852	39.2	3.2	25	27.1	2.2	24	25.3	3.1	60	

TABLE 7.11.1.2.1

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE**

ORIENTATION: L-T		ENVIRONMENT: Distilled Water						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level (Ksi \sqrt{in})				
				2.6	6.0	10.0	20.0	50.0
T851	PLATE	0.08	1			8.09	66.79	
								100.0

1 of 1

ENVIRONMENT: Dry Air

ORIENTATION: L-T

7-563

TABLE 7.11.1.2.3

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: F.C.S.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level (Ksi \sqrt{in})				
T851	PLATE	0.08	1	2.5	5.0	10.0	20.0	50.0
								100.0
						7.08	51.16	

TABLE 7.11.1.2.4

1 of 2

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	-1	6			6.96			
		-1	1-20			6.68	48.49		
		-0.5	5.2			6.89			
		-0.3	6			7.01	51.71		
		-0.1	6			6.87	43.87		
		0	5.2			8.31	53.58		
		0	6			4.29	33.74		
		0.01	3				43.24		
		0.01	6				46.17		
		0.04	1-20			4.05			
		0.05	1-20			5.18	48.49		
		0.05	1-20			3.58			
		0.05	1-20			2.47	33.87		
		0.08	6			5.19			
		0.1	1-20				44.89		

TABLE 7.11.1.2.4 (CONCLUDED)

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.2	6				91.24		
		0.3	6		0.7	7.7	75.84		
		0.5	1-20			10.13			
		0.6	1-20			12.81			
		0.7	6		1.37	17.57			

TABLE 7.11.1.2.5

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: S.C.S.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (K_{SI}/\sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T861	PLATE	0.08	1			7.13			

TABLE 7.11.1.2.6

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.08	0.1				58.37		
		0.08	1		0.63	7.5	65.76		
		0.08	6			9.94	53		
		0.3	1			8.63	62.98		
		0.5	1		0.78	11.62			
T8511	EXTRUDED BAR	0.06	1			7.25			
T852	FORGING	0.33	20			6.28			
		0.33	20			10.16			

TABLE 7.11.1.2.7

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE**

ORIENTATION: T-L

ENVIRONMENT: Dry Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	$FCGR (10^{-6} \text{ in/cycle})$					
				$\Delta K \text{ Level } (K_{SI} \sqrt{\text{in}})$					
				2.5	5.0	10.0	20.0	50.0	100.0
T851	PLATE	0.08	6			6.7	79.78		
T8511	EXTRUDED BAR	0.08	6			4.09			
T852	FORGING	0.33	2-20			6.72	644.02		
		0.33	40		0.36	3.72			

TABLE 7.11.1.2.8

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE

ORIENTATION: T-L **ENVIRONMENT: H.H.A.**

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level ($K_{st}\sqrt{in}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T852	FORGING	0.33	2-20			10.68			

TABLE 7.11.1.2.9

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE

ORIENTATION: T-L

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.6	6.0	10.0	20.0	50.0	100.0
T851	PLATE	0.08	1		0.95	11.78	72.45		
T8511	EXTRUDED BAR	0.08	1		0.64	7.29			
T852	FORGING	0.33	2-20			12.75	202.23		
		0.33	20			10.31			

TABLE 7.11.1.2.10

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE**

ORIENTATION: S-L			ENVIRONMENT: Dry Air						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Kst/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
T852	FORGING	0.33	2-20			8.09			

TABLE 7.11.1.2.11

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE**

ORIENTATION: S-L

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level ($K\sqrt{in}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T862	FORGING	0.33	2-20			14.67			

TABLE 7.11.1.2.12

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE**

ORIENTATION: S-L

ENVIRONMENT: S.T.W.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/ \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T852	FORGING	0.33	2-20			19.63			

TABLE 7.11.1.2.13

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2219 AT ROOM TEMPERATURE

ORIENTATION: Unspecified

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	60.0	100.0
T851	Unspecified	-1	5			4.31	29.14		
		0.1	5		0.48	7.07			
		0.3	30		0.7	6.81			
		0.5	30			8.29			
		0.8	5	0.12	3.08				

TABLE 7.11.2.1

ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS)* (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851	Plate	1.37	-112	T-L	55.0	3.000	1.405	NB	1.612	1.00	34.70	---	---	1973	86213
		3.00			50.0	8.000	2.000	CT	---	1.22	35.00			1974	90011
		3.00			50.1	5.044	1.503	CT	2.623	1.29	35.50			1978	MPC01
		3.00			50.1	4.019	1.999	CT	2.090	1.33	35.90			1978	MPC01
		3.00			50.1	6.016	1.998	CT	3.068	1.36	37.10			1978	MPC01
		3.00			50.1	5.010	1.987	CT	2.703	1.28	35.90			1973	86213
		3.00			50.1	5.010	1.503	CT	2.623	1.33	35.50			1973	86213
		3.00			50.1	4.000	1.999	CT	2.090	1.28	35.90			1973	86213
		3.00			50.1	6.000	1.998	CT	3.137	1.45	38.10			1973	86213
		3.00			50.1	5.010	2.000	CT	2.680	1.28	35.90			1973	86213
		3.00			50.1	4.000	1.998	CT	2.095	1.28	35.80			1973	86213
		1.37		R.T.	51.0	2.977	1.374	CT	1.518	0.93	31.30			1978	MPC01
		1.37			51.0	2.982	1.374	CT	1.521	0.93	31.30	33.4	2.3	1978	MPC01
		1.37			51.0	3.000	1.420	NB	1.600	1.40	38.10			1973	86213
		1.37			51.0	3.000	1.420	NB	1.520	1.14	34.50			1973	86213
		1.37			51.0	2.978	1.374	CT	1.519	0.87	30.40			1978	MPC01
		1.37			51.0	3.000	1.420	NB	1.550	1.16	34.80			1973	86213
		2.62			51.6	3.004	1.500	CT	1.562	0.87	30.90			1978	MPC01
		2.62			51.6	3.027	1.500	CT	1.574	0.93	31.80			1978	MPC01
		3.25			51.7	4.989	1.750	CT	2.594	1.12	34.90			1978	MPC01
		1.37			52.0	3.022	1.376	CT	1.481	0.87	30.70			1978	MPC01
		1.37			52.0	2.975	1.376	CT	1.547	0.90	31.20			1978	MPC01
		3.00			52.0	5.000	1.498	CT	2.567	1.08	34.20			1973	86213

TABLE 7.11.2.1 (CONTINUED)

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2219

ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	3.00	R.T. Cont'd	L-T Cont'd	52.0	5.000	1.498	CT	2.566	1.20	36.00	Cont'd	Cont'd	1973	86213
		3.00			52.4	3.026	1.498	CT	1.543	0.99	33.20			1978	MPC01
		3.00			52.4	2.986	1.499	CT	1.558	0.96	32.80			1978	MPC01
		2.90			52.4	3.022	1.500	CT	1.632	0.96	32.80			1978	MPC01
		3.00			52.5	2.977	1.499	CT	1.548	1.02	33.80			1978	MPC01
		3.00			52.5	2.987	1.499	CT	1.553	1.02	33.80			1978	MPC01
		2.90			52.5	4.987	2.503	CT	2.743	1.02	33.60			1978	MPC01
		2.90			52.5	4.973	2.000	CT	2.586	0.99	33.40			1978	MPC01
		1.75			52.6	4.962	1.751	CT	2.630	0.84	30.80			1978	MPC01
		2.90			52.8	4.987	2.001	CT	2.593	0.90	31.80			1978	MPC01
		2.90			53.0	5.045	2.000	CT	2.573	0.90	32.20			1978	MPC01
		2.90			53.0	3.027	1.503	CT	1.665	0.81	30.70			1978	MPC01
		3.00			53.4	5.010	1.997	CT	2.672	0.87	31.50			1973	86213
		2.90			53.5	4.965	2.002	CT	2.582	0.87	31.60			1978	MPC01
		2.90			53.5	5.018	2.002	CT	2.559	0.90	32.20			1978	MPC01
		2.90			53.5	4.967	2.501	CT	2.582	0.93	32.90			1978	MPC01
		2.90			53.6	4.989	2.501	CT	2.644	0.99	33.80			1978	MPC01
		2.90			53.6	4.954	2.002	CT	2.576	0.96	33.60			1978	MPC01
		3.00			53.7	4.010	1.998	CT	2.043	0.79	30.10			1973	86213
		1.00			53.8	1.990	0.965	CT	1.035	0.81	30.90			1978	MPC01
		1.00			53.8	1.990	0.965	CT	1.015	0.78	30.60			1978	MPC01
		1.00			53.8	2.016	0.965	CT	1.008	0.78	30.60			1978	MPC01

TABLE 7.11.2.1 (CONTINUED)

ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K _{sat})	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K _{sat} /in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	3.00	R.T. Cont'd	L-T Cont'd	54.0	8.000	1.996	CT	3.991	1.03	34.70	Cont'd	Cont'd	1973	86836
		2.90			54.3	4.969	2.002	CT	2.584	0.81	31.20			1978	MPC01
		2.90			54.3	5.006	2.501	CT	2.703	0.81	31.00			1978	MPC01
		2.50			55.7	4.968	1.753	CT	2.633	0.96	34.60			1978	MPC01
		1.37			46.2	3.000	1.402	NB	1.524	1.10	32.60			1973	86213
		1.37			47.4	1.994	1.000	CT	1.017	0.93	29.20			1978	MPC01
		1.75			48.0	3.000	1.508	CT	1.611	1.28	34.40			1972	84306
		1.75			48.0	5.000	1.504	CT	2.615	1.48	37.00			1972	84306
		1.75			48.0	5.000	1.504	CT	2.609	1.48	37.00			1972	84306
		1.75			48.0	2.990	1.508	CT	1.573	1.24	33.90			1972	84306
T851	Plate	1.37	R.T.	T-L	49.2	2.985	1.405	NB	1.592	0.81	28.20	29.7	3.2	1978	MPC01
		1.37			49.2	3.016	1.402	NB	1.538	0.99	31.10			1978	MPC01
		1.37			49.2	2.974	1.402	NB	1.487	0.99	31.30			1978	MPC01
		1.37			49.2	2.974	1.405	NB	1.487	0.84	28.70			1978	MPC01
		1.37			49.2	3.000	1.403	NB	1.526	1.09	32.50			1973	86213
		1.37			49.2	3.008	1.403	NB	1.534	1.08	32.80			1978	MPC01
		1.37			49.2	2.991	1.402	NB	1.585	1.08	32.80			1978	MPC01
		1.37			49.2	3.000	1.405	NB	1.535	0.94	30.20			1978	MPC01
		3.25			49.2	4.977	1.750	CT	2.638	0.84	28.90			1973	86213
		1.37			49.2	3.000	1.405	NB	1.634	0.92	29.90			1978	MPC01
T851	Plate	1.37	R.T.	T-L	49.2	3.000	1.402	NB	1.584	1.10	32.70	29.7	3.2	1973	86213
		1.37			49.2	3.000	1.402	NB	1.605	1.16	33.50			1973	86213
		1.37			49.2	3.000	1.402	NB	1.605	1.16	33.50			1973	86213

TABLE 7.11.2.1 (CONTINUED)

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ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	1.37	R.T. Cont'd	T-L Cont'd	49.3	2.973	1.000	CT	1.546	0.90	29.70	Cont'd	Cont'd	1978	MPC01
		1.38			49.3	3.000	1.380	CT	1.538	0.88	29.30			1972	82880
		1.37			49.3	2.990	1.000	CT	1.555	0.96	30.80			1978	MPC01
		1.37			49.3	3.002	1.000	CT	1.561	0.90	29.80			1978	MPC01
		1.37			49.3	2.000	0.875	CT	1.020	0.81	28.30			1978	MPC01
		1.37			49.3	2.014	0.875	CT	1.007	0.78	27.90			1978	MPC01
		1.37			49.3	2.975	1.125	CT	1.547	0.87	29.50			1978	MPC01
		1.38			49.3	2.000	1.000	CT	1.057	0.79	27.70			1972	82880
		1.37			49.3	3.025	1.125	CT	1.573	0.87	29.30			1978	MPC01
		1.38			49.3	2.000	1.000	CT	1.082	0.77	27.40			1972	82880
		1.38			49.3	3.000	1.380	CT	1.557	0.86	28.90			1972	82880
		1.37			49.3	2.012	0.875	CT	1.026	0.84	28.70			1978	MPC01
		3.00			49.3	4.000	2.001	CT	2.077	1.07	32.30			1973	86213
		1.38			49.3	3.000	1.380	CT	1.555	0.86	28.90			1972	82880
		1.37			49.3	1.494	0.750	CT	0.792	0.67	25.80			1978	MPC01
		1.37			49.3	3.006	1.125	CT	1.563	0.90	29.70			1978	MPC01
		1.38			49.3	2.000	1.000	CT	1.069	0.77	27.40			1972	82880
		3.00			49.3	4.000	1.999	CT	2.085	1.06	32.00			1973	86213
		1.37			49.7	2.004	1.000	CT	1.042	0.75	27.40			1978	MPC01
		1.37			49.7	2.010	1.000	CT	1.045	0.84	29.10			1978	MPC01
		1.37			49.7	2.004	0.999	CT	1.042	0.81	28.60			1978	MPC01
		2.00			50.0	5.000	1.500	CT	...	1.30	36.00			1974	90011

TABLE 7.11.2.1 (CONTINUED)

ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	3.00	50.0	8.000	2.000	CT	---	1.15	34.00	Cont'd	Cont'd	Cont'd	1974	90011	
		2.00	50.0	5.000	1.500	CT	---	1.15	34.00				1974	90011	
		3.25	50.1	4.959	1.750	CT	2.628	0.81	28.80				1978	MPC01	
		3.00	50.6	3.000	1.498	CT	1.550	0.72	27.20				1973	86213	
		3.00	50.6	5.000	1.497	CT	2.582	0.82	28.90				1973	86213	
		3.00	50.6	3.000	1.498	CT	1.550	0.71	26.90				1973	86213	
		3.00	50.6	5.000	1.497	CT	2.575	0.80	28.60				1973	86213	
		1.37	50.8	3.026	1.375	CT	1.543	0.78	28.80				1978	MPC01	
		1.37	50.8	3.000	1.420	NB	1.500	0.81	29.00				1978	MPC01	
		1.37	50.8	2.980	1.420	NB	1.520	0.83	31.40				1978	MPC01	
		1.37	50.8	2.981	1.420	NB	1.550	1.29	36.60				1978	MPC01	
		1.37	50.8	2.973	1.375	CT	1.546	0.72	27.50				1978	MPC01	
		1.37	50.8	3.000	1.420	NB	1.560	1.05	33.30				1978	MPC01	
		1.00	51.2	1.993	0.965	CT	1.096	0.75	28.40				1978	MPC01	
		1.00	51.2	2.013	0.963	CT	1.067	0.78	28.90				1978	MPC01	
		1.00	51.2	1.986	0.964	CT	1.013	0.72	28.00				1978	MPC01	
		2.90	51.6	2.991	1.249	CT	1.645	0.78	29.40				1978	MPC01	
		2.90	51.8	4.993	2.501	CT	2.696	0.70	27.90				1978	MPC01	
		2.90	51.8	4.975	2.002	CT	2.587	0.62	26.20				1978	MPC01	
		2.90	51.9	3.030	1.504	CT	1.697	0.65	26.80				1978	MPC01	
		2.90	51.9	5.017	2.002	CT	2.609	0.70	27.60				1978	MPC01	
		2.90	52.0	4.996	2.002	CT	2.598	0.72	28.20				1978	MPC01	

TABLE 7.11.2.1 (CONTINUED)

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ALUMINUM 2219 K _{Ic}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{Ic} /TYS) ^a (in.)	K _{Ic}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{Ic} (ksi√in.)	K _{Ic} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.90	R.T. Cont'd	T-L Cont'd	52.0	5.033	2.002	CT	2.617	0.65	27.00	Cont'd	Cont'd	1978	MPC01
		2.90			52.0	5.013	2.501	CT	2.657	0.70	28.00			1978	MPC01
		---			52.0	7.990	1.992	CT	4.067	1.05	33.70			1973	85836
		2.90			52.2	5.008	2.002	CT	2.604	0.75	28.90			1978	MPC01
		3.00			52.5	4.010	1.998	CT	2.083	0.81	29.90			1973	86213
		3.00			52.7	5.000	1.999	CT	2.672	0.90	31.70			1973	86213
		2.90			52.8	4.985	2.500	CT	2.692	0.60	26.00			1978	MPC01
		2.90			52.8	5.006	2.002	CT	2.603	0.67	27.50			1978	MPC01
		2.90			53.1	5.000	2.001	CT	2.650	0.67	28.00			1978	MPC01
		2.90			53.1	5.029	2.504	CT	2.766	0.70	28.30			1978	MPC01
		2.50			55.6	4.987	1.751	CT	2.643	0.60	27.30			1978	MPC01
		1.37			56.0	2.004	1.000	CT	1.042	0.83	34.30			1978	MPC01
		1.37			56.0	1.998	0.999	CT	1.039	0.83	34.50			1978	MPC01
		3.00			60.0	2.000	1.000	CT	1.024	0.32	21.40			1973	85836
		3.00			60.0	2.000	1.002	CT	1.013	0.29	20.40			1973	85836
		3.00			60.0	2.000	1.001	CT	0.993	0.30	20.70			1973	85836
		3.00			60.0	2.000	0.870	CT	---	0.62	25.00			1974	90011
		T851			Plate	2.90	R.T.	S-T	52.3	1.982	1.001			CT	0.991	0.98	20.70	21.7	2.3	1978	MPC01
2.90	52.8		2.014	1.002		CT			1.047	0.38	21.00	1978	MPC01		
2.90	53.3		1.996	1.001		CT			1.018	0.94	20.00	1978	MPC01		

TABLE 7.11.2.1 (CONTINUED)

ALUMINUM 2219 K _{IC}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{IC} /TYS) ^a (in.)	K _{IC}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{IC} (Ksi√in.)	K _{IC} MEAN	STAN DEV		
T851	Plate	---	R.T.	S-L	50.2	2.999	1.500	CT	1.590	0.67	26.12	23.0	2.4	1977	MD001
		2.62			50.5	2.016	1.000	CT	1.028	0.46	22.00			1978	MPC01
		2.62			50.5	2.002	1.000	CT	1.041	0.44	21.70			1978	MPC01
		1.37			50.6	0.996	0.500	CT	0.508	0.38	19.80			1978	MPC01
		1.37			50.6	1.000	0.500	CT	0.520	0.38	20.20			1978	MPC01
		3.00			51.8	2.012	1.000	CT	1.026	0.52	24.00			1978	MPC01
		3.00			51.8	2.002	1.000	CT	1.021	0.65	26.60			1978	MPC01
		3.00			51.9	2.000	0.998	CT	0.979	0.47	22.60			1973	86213
		3.00			52.0	2.004	1.000	CT	1.022	0.65	26.60			1978	MPC01
		3.00			52.0	2.018	1.000	CT	1.029	0.57	25.40			1978	MPC01
		1.37			52.3	1.008	0.500	CT	0.504	0.44	22.10			1978	MPC01
		1.37			52.3	1.010	0.500	CT	0.505	0.38	20.80			1978	MPC01
T851	Plate	3.00	52.6	2.000	0.999	CT	0.979	0.38	20.40	1973	86213				
		3.00	52.6	2.000	0.999	CT	0.960	0.51	23.70	1973	86213				
		2.00	50.0	1.490	0.745	CT	0.965	0.62	24.80	1972	84906				
		2.00	50.0	1.570	0.746	CT	0.895	0.45	21.20	1972	84906				
T851	Plate	1.37	88	S-L	50.6	1.000	0.500	CT	0.508	0.40	20.20	21.2	1.0	1973	86213
		1.37			52.3	1.000	0.500	CT	0.504	0.46	22.40			1973	86213
		1.37			52.3	1.000	0.500	CT	0.505	0.42	21.50			1973	86213
		1.37			52.3	1.000	0.500	CT	0.496	0.39	20.60			1973	86213
T851	Forging	---	R.T.	L-S	41.9	3.001	1.501	CT	1.563	1.16	28.58	30.3	3.0	1976	MD001
		---			41.9	3.001	1.499	CT	1.542	1.16	28.64			1976	MD001
		---			41.9	3.001	1.499	CT	1.584	1.37	31.03			1976	MD001

TABLE 7.11.2.1 (CONTINUED)

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ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	3.5 * (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Forging Cont'd	---	R.T. Cont'd	L-S Cont'd	46.1	3.003	1.500	CT	1.566	1.02	29.59	Cont'd	Cont'd	1976	MD001
		---			46.4	3.001	1.500	CT	1.580	1.15	31.58			1976	MD001
		---			46.4	3.003	1.499	CT	1.569	1.06	30.60			1976	MD001
		---			50.1	3.005	1.500	CT	1.418	1.13	33.71			1976	MD001
		---			50.1	3.005	1.500	CT	1.444	1.18	34.55			1976	MD001
		---			50.9	1.998	1.001	CT	0.995	0.57	24.49			1976	MD001
		---			46.2	2.997	1.495	CT	1.589	0.64	22.91			1977	MD001
		---			47.5	1.998	1.001	CT	1.000	0.63	23.96			1976	MD001
		---			47.5	3.001	1.502	CT	1.619	0.50	21.42			1976	MD001
		---			47.7	1.999	1.000	CT	1.003	0.71	25.50			1976	MD001
T851	Forging	---	R.T.	T-S	47.9	2.998	1.502	CT	1.607	0.92	29.13	25.3	2.3	1977	MD001
		---			48.1	2.000	1.001	CT	1.059	0.73	26.01			1977	MD001
		---			48.1	2.996	1.496	CT	1.615	0.79	27.04			1977	MD001
		---			48.2	3.001	1.501	CT	1.555	0.51	21.78			1976	MD001
		---			48.3	3.001	1.501	CT	1.531	0.67	25.13			1976	MD001
		---			48.4	3.000	1.501	CT	1.621	0.52	22.14			1976	MD001
		---			48.5	1.998	1.001	CT	1.047	0.86	28.50			1976	MD001
		---			48.7	1.995	1.001	CT	1.033	0.75	26.87			1976	MD001
		---			49.0	2.997	1.495	CT	1.596	0.64	24.84			1977	MD001
		---			49.2	1.996	1.001	CT	0.999	0.66	25.29			1976	MD001
		---			49.2	1.997	1.000	CT	1.031	0.56	23.95	26.35		1976	MD001
		---			50.1	1.999	0.997	CT	1.033	0.69	26.35			1977	MD001

TABLE 7.11.2.1 (CONTINUED)

ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /T _{TS}) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Forging Cont'd	---	R.T. Cont'd	T-8 Cont'd	50.4	3.000	1.501	CT	1.562	0.76	27.86	Cont'd	Cont'd	1976	MD001
		---			51.9	3.000	1.501	CT	1.563	0.71	27.77			1976	MD001
		---			46.2	2.997	1.495	CT	1.643	0.67	24.00	25.6	3.1	1977	MD001
		---			46.2	2.996	1.495	CT	1.661	0.67	24.08			1977	MD001
		---			46.2	2.996	1.496	CT	1.616	0.68	24.13			1977	MD001
		---			46.2	2.996	1.495	CT	1.614	0.61	22.84			1977	MD001
		---			46.8	3.003	1.502	CT	1.556	0.62	23.40			1976	MD001
		---			46.8	3.001	1.501	CT	1.569	0.62	23.47			1976	MD001
		---			47.1	3.007	1.504	CT	1.700	0.69	24.75			1979	MD001
		---			47.7	1.999	1.001	CT	1.047	0.65	24.45			1977	MD001
T851	Forging	---	R.T.	S-L	47.7	1.998	1.001	CT	1.070	0.67	24.72	25.6	3.1	1977	MD001
		---			47.8	3.001	1.501	CT	1.542	0.52	21.89			1976	MD001
	---	47.8	3.003	1.501	CT	1.532	0.64	24.27	1976	MD001					
	---	47.9	2.997	1.501	CT	1.594	0.80	27.12	1977	MD001					
	---	48.6	2.999	1.502	CT	1.617	0.77	27.14	1977	MD001					
	---	48.7	1.997	1.001	CT	1.083	0.52	22.29	1976	MD001					
	---	49.0	1.997	1.001	CT	1.026	0.74	26.83	1976	MD001					
	---	49.0	1.998	1.001	CT	1.040	0.69	25.79	1976	MD001					
	---	49.1	3.001	1.499	CT	1.575	0.77	27.41	1977	MD001					
	---	49.1	1.998	1.000	CT	1.038	0.60	24.23	1976	MD001					
---	49.1	1.998	1.000	CT	1.039	0.63	24.70	1976	MD001						
---	49.1	2.999	1.502	CT	1.552	1.19	33.88	1977	MD001						

TABLE 7.11.2.1 (CONTINUED)

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ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TVS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K _{1c} /√in.)	K _{1c} MEAN	STAN DEV		
T861 Cont'd	Forging Cont'd	---	R.T. Cont'd	S-L Cont'd	49.1	1.998	1.001	CT	1.060	0.68	23.79	Cont'd	1976	MD001	
		---			49.1	2.000	1.001	CT	1.080	0.74	26.73		1977	MD001	
		---			49.1	1.998	0.999	CT	1.033	0.64	24.89		1976	MD001	
		---			49.1	3.001	1.501	CT	1.586	0.58	23.84		1976	MD001	
		---			49.1	3.003	1.501	CT	1.572	0.62	24.50		1976	MD001	
		---			49.1	1.997	1.000	CT	1.057	0.64	25.00		1976	MD001	
		---			49.1	1.998	1.000	CT	1.035	0.62	24.51		1976	MD001	
		---			49.1	3.001	1.502	CT	1.531	0.82	28.16		1977	MD001	
		---			49.1	3.000	1.500	CT	1.636	0.58	23.85		1977	MD001	
		---			49.1	1.998	1.001	CT	1.044	0.68	25.64		1977	MD001	
		---			49.2	2.999	1.502	CT	1.602	0.46	21.19		1976	MD001	
		---			49.2	3.003	1.501	CT	1.608	0.45	20.97		1976	MD001	
		---			49.3	2.997	1.496	CT	1.592	0.92	29.96		1977	MD001	
		---			49.3	2.996	1.496	CT	1.633	0.83	28.54		1977	MD001	
		---			49.4	3.007	1.502	CT	1.516	0.94	30.42		1977	MD001	
		---			49.5	3.001	1.501	CT	1.535	0.58	24.00		1976	MD001	
		---			49.5	3.002	1.500	CT	1.528	0.77	27.60		1976	MD001	
		---			49.7	2.999	1.500	CT	1.595	0.80	28.16		1977	MD001	
		---			49.7	3.000	1.500	CT	1.634	0.79	28.03		1977	MD001	
		---			49.7	3.000	1.504	CT	1.641	0.57	23.89		1978	MD001	
		---			49.7	3.000	1.499	CT	1.626	0.82	28.62		1977	MD001	
		---			49.7	3.000	1.501	CT	1.586	0.63	25.12		1978	MD001	

TABLE 7.11.2.1 (CONTINUED)

ALUMINUM 2219 K _{IC}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{IC} /TVS) ^a (in.)	K _{IC}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{IC} (Ksi√in.)	K _{IC} MEAN	STAN DEV		
T851 Cont'd	Forging Cont'd	---	R.T. Cont'd	S-L Cont'd	49.8	1.996	1.001	CT	1.010	0.38	19.50	Cont'd	Cont'd	1976	MD001
		---			49.8	1.996	1.001	CT	1.040	0.43	20.75			1976	MD001
		---			49.9	1.996	1.002	CT	1.071	0.71	26.69			1976	MD001
		---			49.9	2.000	1.001	CT	1.063	0.51	22.66			1977	MD001
		---			49.9	1.997	1.002	CT	1.065	0.66	25.79			1976	MD001
		---			49.9	1.999	1.001	CT	1.069	0.52	22.84			1977	MD001
		---			50.1	3.000	1.490	CT	1.604	1.17	34.31			1979	MD001
		---			50.1	3.000	1.499	CT	1.628	0.81	28.60			1978	MD001
		---			50.2	3.000	1.500	CT	1.678	0.57	24.15			1977	MD001
		---			50.2	2.001	1.004	CT	1.008	0.55	23.66			1978	MD001
		---			50.2	1.995	1.005	CT	1.038	0.48	22.17			1978	MD001
		---			50.2	3.000	1.500	CT	1.603	0.94	30.85			1978	MD001
		---			50.2	2.998	1.499	CT	1.605	0.90	30.25			1978	MD001
		---			50.3	1.997	1.000	CT	1.091	0.59	24.51			1976	MD001
		---			50.3	3.000	1.501	CT	1.581	0.96	31.30			1976	MD001
		---			50.3	3.001	1.502	CT	1.620	1.02	32.18			1976	MD001
		---			50.3	1.998	1.001	CT	1.079	0.56	23.90			1976	MD001
		---			50.3	1.997	0.999	CT	1.080	0.45	21.46			1976	MD001
		---			50.3	1.998	1.000	CT	1.046	0.46	21.62			1976	MD001
		---			50.3	2.999	1.497	CT	1.584	1.04	32.52			1976	MD001
		---			50.4	3.000	1.501	CT	1.556	0.88	29.91			1976	MD001
		---			50.4	3.000	1.501	CT	1.586	0.98	31.60			1976	MD001

TABLE 7.11.2.1 (CONTINUED)

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ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	---	R.T. Cont'd	S-L Cont'd	50.5	1.997	1.000	CT	1.083	0.81	28.80	Cont'd	Cont'd	1976	MD001
		---			50.5	1.997	1.000	CT	1.037	0.89	30.27			1976	MD001
		---			50.5	1.997	1.000	CT	1.089	0.52	23.17			1976	MD001
		---			50.5	1.998	1.000	CT	1.057	0.49	22.48			1976	MD001
		---			50.7	1.995	1.002	CT	1.041	0.55	23.83			1976	MD001
		---			50.7	1.995	1.002	CT	1.030	0.66	26.20			1976	MD001
		---			50.8	1.997	0.996	CT	1.063	0.55	23.86			1977	MD001
		---			50.9	2.000	1.000	CT	1.066	0.64	25.95			1978	MD001
		---			50.9	1.997	1.001	CT	1.052	0.57	24.44			1976	MD001
		---			50.9	1.998	1.000	CT	1.047	0.51	23.19			1976	MD001
		---			51.1	3.001	1.501	CT	1.591	0.58	24.82			1976	MD001
		---			51.1	3.001	1.502	CT	1.594	0.60	25.17			1976	MD001
		---			51.3	1.997	1.000	CT	1.065	0.60	25.33			1976	MD001
		---			51.3	2.000	1.000	CT	1.075	0.50	23.06			1976	MD001
		---			51.3	1.996	1.001	CT	1.024	0.61	25.54			1976	MD001
		---			51.3	1.997	1.001	CT	1.068	0.55	24.21			1976	MD001
		---			51.5	1.995	0.996	CT	1.040	0.54	24.06			1978	MD001
		---			51.5	1.997	1.000	CT	1.087	0.58	24.91			1978	MD001
		---			51.5	2.000	0.999	CT	1.045	0.67	26.70			1978	MD001
		---			51.5	1.997	1.005	CT	1.020	0.48	22.76			1978	MD001
		---			52.2	2.001	1.000	CT	1.033	0.54	24.30			1978	MD001

TABLE 7.11.2.1 (CONTINUED)

ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} T _{1/2}) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T852	Forging	---	R.T.	L-S	43.4	2.999	1.499	CT	1.539	0.89	25.92	28.3	3.9	1977	MD001
		---			43.4	2.999	1.499	CT	1.507	0.91	26.22			1977	MD001
		---			48.5	3.001	1.502	CT	1.548	1.14	32.82			1976	MD001
		7.50			41.9	5.000	2.500	CT	2.580	1.72	34.80			1977	AL001
		7.50			41.9	5.000	2.500	CT	2.550	1.55	33.00			1977	AL001
T852	Forging	7.50	R.T.	L-T	41.9	5.000	2.500	CT	2.570	1.79	35.50	39.2	3.2	1977	AL001
		7.50			43.4	5.000	2.500	CT	2.560	1.98	38.60			1977	AL001
		5.50			44.6	5.000	2.500	CT	2.520	1.91	39.00			1977	AL001
		5.50			44.6	5.000	2.500	CT	2.550	2.08	40.70			1977	AL001
		5.50			44.6	5.000	2.500	CT	2.520	1.81	39.00			1977	AL001
		4.50			45.2	5.000	2.500	CT	2.550	1.51	35.10			1977	AL001
		4.50			45.2	5.000	2.500	CT	2.580	1.68	37.00			1977	AL001
		4.50			45.2	5.000	2.500	CT	2.560	1.63	36.50			1977	AL001
		5.50			49.2	5.000	2.500	CT	2.610	1.56	38.90			1977	AL001
		5.50			49.2	5.000	2.500	CT	2.550	1.58	39.10			1977	AL001
		5.50			49.2	5.000	2.500	CT	2.530	1.83	42.10			1977	AL001
		4.50			50.2	5.000	2.500	CT	2.600	1.69	41.30			1977	AL001
		4.50			50.2	5.000	2.500	CT	2.560	2.16	46.70			1977	AL001
		3.50			50.3	5.000	2.500	CT	2.570	1.67	41.10			1977	AL001
		3.50			50.3	5.000	2.500	CT	2.650	1.97	44.70			1977	AL001
		3.50			50.3	5.000	2.500	CT	2.560	1.78	42.40			1977	AL001
		2.50			50.4	5.000	2.490	CT	2.530	1.49	38.90			1977	AL001
		2.50			50.4	5.000	2.500	CT	2.450	1.35	37.00			1977	AL001

TABLE 7.11.2.1 (CONTINUED)

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ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T852 Cont'd	Forging Cont'd	2.50	R.T. Cont'd	L-T Cont'd	50.4	5.000	2.490	CT	2.540	1.33	36.80	Cont'd	Cont'd	1977	AL001
		2.00			50.7	3.000	1.500	CT	1.570	1.48	39.00			1977	AL001
		3.50			51.2	5.000	2.500	CT	2.520	1.59	40.80			1977	AL001
		3.50			51.2	5.000	2.500	CT	2.580	1.69	42.10			1977	AL001
		3.50			51.2	5.000	2.500	CT	2.510	1.56	40.40			1977	AL001
T852	Forging	---	R.T.	T-S	43.8	3.000	1.502	CT	1.617	1.06	28.53	29.1	2.9	1976	MD001
		---			45.7	2.998	1.500	CT	1.569	0.81	26.04			1976	MD001
		---			47.1	3.000	1.501	CT	1.566	1.30	34.03			1976	MD001
		---			47.2	3.000	1.500	CT	1.574	1.12	31.70			1976	MD001
		---			47.8	3.000	1.502	CT	1.562	0.77	26.66			1976	MD001
T852	Forging	---	R.T.	T-L	47.9	2.999	1.501	CT	1.578	0.81	27.33	27.1	2.2	1976	MD001
		---			48.0	3.000	1.502	CT	1.549	0.91	29.10			1976	MD001
		5.50			43.1	5.000	2.500	CT	2.620	1.07	28.20			1977	AL001
		5.50			43.1	5.000	2.500	CT	2.570	1.10	28.60			1977	AL001
		---			44.0	5.000	1.984	CT	2.502	0.76	24.10			1973	85836
		---			44.0	5.000	1.998	CT	2.271	0.63	22.20			1973	85836
		7.50			44.2	3.000	1.500	CT	1.540	0.81	25.10			1977	AL001
		7.50			44.2	3.000	1.500	CT	1.530	0.69	23.30			1977	AL001
		4.50			45.7	5.000	2.500	CT	2.540	0.85	28.10			1977	AL001
		4.50			45.7	5.000	2.500	CT	2.530	0.97	28.40			1977	AL001
T852	Forging	5.50	R.T.	T-L	46.4	5.000	2.500	CT	2.520	0.74	25.20	27.1	2.2	1977	AL001
		5.50			49.8	5.000	2.500	CT	2.560	0.80	28.10			1977	AL001
		3.50													

TABLE 7.11.2.1 (CONTINUED)

ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi ^{1/2} in.)	K _{1c} MEAN	STAN DEV		
T852 Cont'd	Forging Cont'd	3.50	R.T. Cont'd	T-L Cont'd	49.8	5.000	2.500	CT	2.560	0.83	28.70	Cont'd	Cont'd	1977	AL001
		3.50			49.8	5.000	2.500	CT	2.580	0.80	28.20			1977	AL001
		2.50			49.9	5.000	2.490	CT	2.570	0.68	26.00			1977	AL001
		2.50			49.9	5.000	2.500	CT	2.560	0.94	30.60			1977	AL001
		2.50			49.9	5.000	2.490	CT	2.510	0.68	26.10			1977	AL001
		3.50			50.2	5.000	2.500	CT	2.530	0.68	26.20			1977	AL001
		3.50			50.2	5.000	2.500	CT	2.520	0.67	26.00			1977	AL001
		3.50			50.2	5.000	2.500	CT	2.500	0.62	24.90			1977	AL001
		2.00			50.6	3.000	1.500	CT	1.560	0.79	28.50			1977	AL001
		4.50			50.6	5.000	2.500	CT	2.510	0.74	27.50			1977	AL001
		2.00			50.6	3.000	1.500	CT	1.510	0.84	29.40			1977	AL001
		4.50			50.6	5.000	2.500	CT	2.570	0.83	29.10			1977	AL001
		4.50			50.6	5.000	2.500	CT	2.510	0.87	29.80			1977	AL001
		2.00			50.6	3.000	1.500	CT	1.560	0.83	29.20			1977	AL001
T852	Forging	---	R.T.	S-T	43.0	3.000	1.502	CT	1.565	1.20	29.88	28.5	2.3	1976	MD001
		---			44.7	2.999	1.501	CT	1.564	0.98	28.00			1976	MD001
		---			45.2	2.999	1.500	CT	1.562	0.82	25.89			1976	MD001
		---			46.8	3.000	1.502	CT	1.573	0.76	26.97			1976	MD001
		---			49.1	3.000	1.501	CT	1.546	1.03	31.64			1976	MD001
T852	Forging	---	R.T.	S-L	42.6	3.000	1.500	CT	1.694	0.59	20.72	25.3	3.1	1977	MD001
		---			42.9	1.997	0.999	CT	1.077	0.72	23.09			1976	MD001
		---			42.9	1.997	0.999	CT	1.047	0.69	22.65			1976	MD001

TABLE 7.11.2.1 (CONTINUED)

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ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (KSI)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (KSI/in.)	K _{1c} MEAN	STAN DEV		
T852 Cont'd	Forging Cont'd	...	R.T. Cont'd	S-L, Cont'd	43.2	3.001	1.502	CT	1.632	0.92	26.28	Cont'd	Cont'd	1977	MD001
		...			43.2	3.001	1.501	CT	1.666	0.77	24.02			1977	MD001
		...			43.6	1.999	0.999	CT	1.077	0.67	22.73			1976	MD001
		...			44.0	2.998	1.500	CT	1.596	0.88	26.25			1976	MD001
		...			44.0	3.001	1.601	CT	1.636	0.65	22.46			1976	MD001
		...			44.0	3.009	1.500	CT	1.570	0.66	22.66			1976	MD001
		...			44.0	2.999	1.500	CT	1.570	0.83	25.39			1976	MD001
		...			44.0	3.009	1.502	CT	1.636	0.68	22.96			1976	MD001
		7.50			44.1	4.000	2.000	CT	2.050	0.88	26.10			1977	AL001
		7.50			44.1	4.000	2.000	CT	2.020	0.87	26.00			1977	AL001
		...			44.2	2.999	1.500	CT	1.614	0.88	26.37			1976	MD001
		...			44.2	3.000	1.499	CT	1.594	1.36	32.71			1976	MD001
		...			44.2	2.999	1.500	CT	1.598	0.81	25.17			1976	MD001
		...			44.2	3.000	1.500	CT	1.590	1.20	30.73			1976	MD001
		...			44.2	3.000	1.500	CT	1.603	1.41	33.20			1976	MD001
		...			44.2	3.000	1.502	CT	1.566	0.90	26.65			1976	MD001
		...			44.2	3.000	1.500	CT	1.572	1.19	30.55			1976	MD001
		...			44.2	3.000	1.502	CT	1.568	0.91	26.71			1976	MD001
		...			44.5	3.001	1.499	CT	1.597	0.54	20.84			1976	MD001
		...			44.5	3.007	1.501	CT	1.607	0.60	21.91			1976	MD001
		...			44.5	3.001	1.502	CT	1.468	1.07	29.23			1976	MD001
		...			44.5	3.005	1.501	CT	1.566	0.62	22.32			1976	MD001

TABLE 7.11.2.1 (CONTINUED)

ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K ₀₁)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₀₁ /TYS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K ₀₁ /in.)	K _{1c} MEAN	STAN DEV		
T852 Cont'd	Forging Cont'd	---	---	R.T. Cont'd	S-L Cont'd	44.5	3.000	1.500	CT	1.591	0.62	22.23	Cont'd	1976	MD001
		---	---			44.7	1.998	0.999	CT	1.079	0.64	22.75		1976	MD001
		---	---			45.3	1.997	0.998	CT	1.097	0.68	23.66		1976	MD001
		---	---			45.4	3.001	1.501	CT	1.592	0.95	28.07		1976	MD001
		---	---			45.4	3.000	1.501	CT	1.571	1.01	28.90		1976	MD001
		---	---			45.6	3.001	1.501	CT	1.478	1.01	28.99		1976	MD001
		---	---			46.7	2.996	1.502	CT	1.486	1.43	35.32		1977	MD001
		---	---			46.8	1.995	1.000	CT	1.063	0.63	23.61		1976	MD001
		4.50	---			47.0	3.000	1.500	CT	1.510	0.56	22.20		1977	AL001
		4.50	---			47.0	3.000	1.500	CT	1.530	0.67	24.30		1977	AL001
		4.50	---			47.0	3.000	1.500	CT	1.550	0.67	24.40		1977	AL001
		---	---			47.2	3.001	1.502	CT	1.514	0.90	28.45		1976	MD001
		5.50	---			47.2	2.000	1.000	CT	1.030	0.63	23.60		1977	AL001
		5.50	---			47.2	2.000	1.000	CT	1.030	0.61	23.40		1977	AL001
		---	---			48.9	1.997	0.999	CT	1.051	0.58	23.67		1976	MD001
		---	---			49.1	3.000	1.501	CT	1.616	0.67	25.44		1977	MD001
		---	---			49.3	3.003	1.501	CT	1.586	0.81	28.09		1976	MD001
		---	---			49.6	3.003	1.502	CT	1.628	0.54	23.07		1977	MD001
		3.50	---			49.7	2.000	1.000	CT	1.040	0.64	25.10		1977	AL001
		3.50	---			49.7	2.000	1.000	CT	1.030	0.65	25.30		1977	AL001
		3.50	---			49.7	2.000	1.000	CT	1.020	0.67	25.80		1977	AL001
		5.50	---			50.8	4.000	2.000	CT	2.050	0.69	26.60		1977	AL001

TABLE 7.11.2.1 (CONTINUED)

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ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ¹ (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi/in.)	K _{1c} MEAN	STAN DEV		
T852 Cont'd	Forging Cont'd	5.50	R.T. Cont'd	S-L Cont'd	50.8	4.000	2.000	CT	2.040	0.60	24.90	Cont'd	Cont'd	1977	AL001
		5.50			50.8	4.000	2.000	CT	2.040	0.59	24.70			1977	AL001
		3.50			51.1	2.000	1.000	CT	1.020	0.61	25.20			1977	AL001
		3.50			51.1	2.000	1.000	CT	1.040	0.62	25.50			1977	AL001
		2.50			51.1	2.000	1.000	CT	1.010	0.43	21.20			1977	AL001
		2.50			51.1	2.000	1.000	CT	1.010	0.44	21.40			1977	AL001
		3.50			51.1	2.000	1.000	CT	1.010	0.54	23.80			1977	AL001
		2.50			51.1	2.000	1.000	CT	1.010	0.49	22.60			1977	AL001
		4.50			51.2	3.000	1.500	CT	1.670	0.63	25.70			1977	AL001
		4.50			51.2	3.000	1.500	CT	1.570	0.52	23.40			1977	AL001
		4.50			51.2	3.000	1.500	CT	1.530	0.68	26.70			1977	AL001
		2.00			51.5	1.500	0.750	CT	0.800	0.62	25.60			1977	AL001
		---			52.3	1.997	1.001	CT	1.044	0.60	25.63			1976	MD001
T852	Forging	3.00	82	L-T	53.0	4.000	1.502	CT	2.055	0.99	33.30	---	---	1973	86213
T852	Forging	3.00	82	T-L	53.3	4.000	1.501	CT	2.037	0.43	22.00	---	---	1973	86213
T852	Forging	3.00	82	S-T	52.7	2.500	0.748	CT	1.244	0.46	22.60	---	---	1973	86213
T852	Forging	3.50	84	T-L	48.0	3.990	1.686	CT	2.077	0.87	28.30	---	---	1973	86213
T852	Forging	3.50	84	S-T	50.0	2.500	1.000	CT	1.231	0.73	27.10	---	---	1973	86213
T852	Forging	6.75	85	L-T	48.0	3.990	1.998	CT	1.985	1.41	34.60	35.1	0.5	1973	86213
		6.75			49.4	4.000	1.996	CT	1.970	1.27	35.20			1973	86213
		6.75			51.2	4.000	1.997	CT	1.978	1.20	35.50			1973	86213

TABLE 7.11.2.1 (CONTINUED)

ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T852	Forging	6.75	85	T-L	46.2	3.990	1.997	CT	2.067	0.89	27.50	25.3	2.7	1973	86213
		6.75			46.5	3.990	1.997	CT	2.127	0.95	28.70			1973	86213
		6.75			49.2	4.000	1.997	CT	2.080	0.56	23.30			1973	86213
		6.75			49.7	4.000	1.997	CT	2.019	0.51	22.50			1973	86213
		6.75			49.7	3.990	1.997	CT	1.987	0.62	24.70			1973	86213
T852	Forging	6.75	85	S-T	44.9	2.500	1.249	CT	1.233	0.67	23.30	23.5	0.8	1973	86213
		6.75			46.7	2.500	1.249	CT	1.234	0.62	23.30			1973	86213
		6.75			46.7	2.500	1.249	CT	1.243	0.69	24.60			1973	86213
		6.75			48.7	2.500	0.998	CT	1.267	0.60	23.80			1973	86213
		6.75			49.7	2.500	0.998	CT	1.185	0.51	22.50			1973	86213
T87	Plate	2.50	-423	T-S	---	2.000	1.252	CT	1.100	0.58	35.00	41.0	8.2	1972	84319
		2.50			---	2.500	1.255	NB	1.220	1.00	47.20			1972	84319
		2.50			73.0	2.500	1.253	NB	1.240	1.10	48.80			1972	84319
		2.50			73.0	2.000	1.251	CT	1.110	0.51	33.00			1972	84319
		2.50			---	2.000	1.249	CT	1.120	0.55	31.30			1972	84319
T87	Plate	2.50	-320	T-S	---	2.500	1.249	NB	1.220	1.00	43.30	36.9	6.4	1972	84319
		2.50			67.0	2.000	1.251	CT	1.140	0.55	31.40			1972	84319
		2.50			67.0	2.500	1.254	NB	1.230	1.00	41.60			1972	84319
		1.50			67.0	5.000	1.468	CT	2.528	0.95	41.30			1972	85631
		1.50			67.0	5.000	1.470	CT	2.593	0.92	40.50			1972	85631
T87	Plate	1.50	-300	T-L	67.0	5.000	1.466	CT	2.671	---	32.50	---	1972	85631	

TABLE 7.11.2.1 (CONCLUDED)

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ALUMINUM 2219 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T87	Plate	2.00	R.T.	L-T	56.7	2.000	1.000	CT	1.003	0.54	26.30	26.0	3.0	1973	86213
		2.00			56.7	4.000	2.000	CT	1.998	0.58	27.40			1973	86698
		2.00			56.7	4.000	2.000	CT	2.039	0.59	27.50			1973	86698
		2.00			56.7	2.000	0.999	CT	1.012	0.50	25.40			1973	86213
		2.00			56.7	4.000	2.000	CT	2.044	0.60	27.70			1973	86698
		1.50			59.4	5.000	1.467	CT	2.570	0.82	33.90			1972	85631
T87	Plate	2.50	R.T.	T-S	---	2.000	1.252	CT	1.110	0.57	26.10	31.3	5.8	1972	84319
		2.50			---	2.500	1.253	NB	1.240	1.10	36.40			1972	84319
		2.50			55.0	2.000	1.252	CT	1.140	0.58	26.40			1972	84319
		2.50			55.0	2.500	1.250	NB	1.270	1.10	36.20			1972	84319
T87	Plate	1.00	R.T.	T-L	57.1	2.000	0.970	CT	1.050	0.36	21.70	22.0	0.4	1973	86213
		1.00			57.1	2.000	0.970	CT	1.069	0.38	22.20			1973	86213
T87	Plate	1.00	82	T-L	57.1	2.000	0.971	CT	1.034	0.40	22.70	---	---	1973	86213
		1.00			57.1	2.000	0.970	CT	1.072	0.36	21.70			1973	86213
T87	Plate	1.00	84	T-L	57.1	2.000	0.970	CT	1.052	0.36	21.80	21.8	0.1	1973	86213
		1.00			57.1	2.000	0.971	CT	1.051	0.37	21.90			1973	86213
T87	Plate	1.50	300	L-T	---	5.000	1.466	CT	2.573	---	34.40	29.9	6.4	1972	85631
		1.50			---	5.000	1.466	CT	2.581	---	25.40			1972	85631
T87-300F 100HRS	Plate	1.50	R.T.	L-T	---	5.000	1.467	CT	2.560	---	34.50	34.8	0.4	1972	85631
		1.50			---	5.000	1.467	CT	2.572	---	35.10			1972	85631

TABLE 7.11.2.2

ALUMINUM 2219 K _C																																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER																
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _y	MAX (Ksi) σ _{max}	K _{app} (Ksi√in.)	K _{app} MEAN	STAN DEV	K _C (Ksi√in.)	K _C MEAN	STAN DEV																		
BUCKLING OF CRACK EDGES NOT RESTRAINED																																			
T81	Sheet	0.06	R.T.	L-T	53.0	2.000	0.062	0.627	1.034	34.70	36.60	38.65*	---	---	---	56.24*	---	1973	86213																
		0.06														---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
T81	Sheet	0.06	R.T.	T-L	53.0	2.000	0.062	0.626	0.863	34.50	35.80	37.81*	---	---	---	47.19*	---	1973	86213																
		0.06														---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
T851	Sheet	0.12	R.T.	L-T	50.6	3.000	0.123	1.090	1.700	---	33.00	47.07*	---	---	---	67.98*	---	1973	86213																
		0.12														---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
		0.12														---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
		0.12														---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
		0.12														---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
		0.12														---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		0.12														---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		0.12														---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		0.12														---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		0.12														---		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
T851	Plate	1.00	R.T.	L-T	50.6	20.000	1.000	7.000	10.500	---	18.30	65.72	64.2	5.3	90.21	9.0	1973	86213																	
		1.00															---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
		1.00															---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
		1.00															---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.11.2.2 (CONTINUED)

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ALUMINUM 2219 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T851 Cont'd	Plate Cont'd	1.00	R.T. Cont'd	L-T Cont'd	51.1	20.000	1.000	7.000	10.050	---	16.00	57.46	Cont'd	Cont'd	Cont'd	75.75	Cont'd	Cont'd	1973	86213
		1.00			51.1	20.000	1.000	7.000	10.100	---	16.30	58.53				77.51			1973	86213
		1.00			51.1	20.000	1.000	7.000	9.450	---	16.00	57.46				71.81			1973	86213
		1.00			51.1	20.000	1.000	7.000	9.750	---	15.80	56.74				72.83			1973	86213
		1.00			52.0	20.000	1.000	7.000	10.400	---	18.60	66.79				90.86			1973	86213
		1.00			52.0	20.000	1.000	7.000	10.500	---	18.80	67.51				92.67			1973	86213
		1.00			52.0	20.000	1.000	7.000	10.870	---	18.00	64.64				91.75			1973	86213
		1.00			52.0	20.000	1.000	7.000	12.000	---	18.30	65.72				103.63*			1973	86213
		0.12			49.3	3.000	0.126	1.100	1.680	---	30.10	43.20*				61.24*			1973	86213
		0.12			49.3	3.000	0.126	1.100	1.740	---	29.80	42.77*				62.93*			1973	86213
		0.12			49.3	3.000	0.127	1.090	1.560	---	29.20	41.65*				55.25*			1973	86213
		0.12			49.3	3.000	0.127	1.100	1.560	---	29.50	42.34*				55.81*			1973	86213
T851	Sheet	0.12	R.T.	T-L	50.8	3.000	0.127	1.080	1.600	---	28.80	40.82*	---	---	---	55.82*	---	---	1973	86213
		0.12			50.8	3.000	0.127	1.100	1.620	---	30.00	43.06*				58.85*			1973	86213
		0.12			50.8	3.000	0.127	1.090	1.590	---	28.30	40.37*				54.52*			1973	86213
		0.12			50.8	3.000	0.127	1.080	1.560	---	30.40	43.09*				57.52*			1973	86213
		0.12			51.2	3.000	0.127	1.100	1.580	---	30.30	43.49*				58.02*			1973	86213
		0.12			51.2	3.000	0.127	1.080	1.590	---	30.30	42.95*				58.37*			1973	86213
		0.12			51.2	3.000	0.127	1.100	1.480	---	29.20	41.91*				52.67*			1973	86213
		0.12			51.2	3.000	0.127	1.120	1.600	---	29.20	42.44*				56.59*			1973	86213
		0.12			51.2	3.000	0.127	1.100	1.580	---	30.10	43.20*				61.24*			1973	86213
		0.12			51.2	3.000	0.127	1.100	1.740	---	29.80	42.77*				62.93*			1973	86213
		0.12			51.2	3.000	0.127	1.090	1.560	---	29.20	41.65*				55.25*			1973	86213
		0.12			51.2	3.000	0.127	1.100	1.560	---	29.50	42.34*				55.81*			1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.11.2.2 (CONTINUED)

ALUMINUM 2219 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2s _e	FINAL (in.) 2s _f	ONSET (Ksi) σ _e	MAX (Ksi) σ _{max}	K _{TC} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi/in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T851	Plate	1.00	R.T.	T-L	49.3	20.000	1.000	7.000	9.500	---	14.90	53.51	51.4	2.8	67.17	66.3	4.2	1973	86213
		1.00			49.3	20.000	1.000	7.000	10.100	---	15.10	54.23			71.81			1973	86213
		1.00			49.3	20.000	1.000	7.000	10.000	---	14.70	52.79			69.28			1973	86213
		1.00			49.3	20.000	1.000	7.000	9.300	---	14.80	53.15			65.54			1973	86213
		1.00			50.2	20.000	1.000	7.000	10.050	---	13.00	46.68			61.55			1973	86213
		1.00			50.2	20.000	1.000	7.000	9.200	---	13.50	48.48			59.25			1973	86213
		1.00			50.2	20.000	1.000	7.000	9.990	---	13.40	48.12			63.10			1973	86213
		1.00			50.2	20.000	1.000	7.000	9.850	---	13.40	48.12			62.32			1973	86213
		1.00			51.2	20.000	1.000	7.000	9.650	---	14.10	50.63			64.42			1973	86213
		1.00			51.2	20.000	1.000	7.000	10.000	---	14.80	53.15			69.76			1973	86213
		1.00			51.2	20.000	1.000	7.000	10.000	---	15.00	53.87			70.70			1973	86213
		1.00			51.2	20.000	1.000	7.000	10.000	---	15.10	54.23			71.17			1973	86213
BUCKLING OF CRACK EDGES RESTRAINED																			
T87	Sheet	0.06	-423	L-T	70.7	5.500	0.067	0.610	---	---	61.50	60.66*	---	---	---	---	---	1971	80104
		0.06			70.7	5.500	0.067	0.490	---	---	62.60	55.19*			---			1971	80104
		0.06			70.7	5.500	0.068	0.300	---	---	66.70	45.87*			---			1971	80104
		0.06			70.7	5.500	0.068	0.400	---	---	64.60	51.37*			---			1971	80104
T87	Sheet	0.06	-423	L-T	70.7	6.700	0.068	0.820	---	---	58.20	66.67*	---	---	---	---	---	1971	80104
		0.06			70.7	6.700	0.068	0.890	---	---	57.50	68.74*			---			1971	80104

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.11.2.2 (CONTINUED)

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ALUMINUM 2219 K _C																					
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER		
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _s	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV				
BUCKLING OF CRACK EDGES RESTRAINED																					
T87 Cont'd	Sheet Cont'd	0.06	-423 Cont'd	L-T Cont'd	70.7	6.700	0.068	1.180	---	---	53.60	74.40*	Cont'd	Cont'd	---	Cont'd	Cont'd	---	1971	80104	
		0.06			70.7	6.700	0.069	1.030	---	---	55.70	71.90*			---					1971	80104
T87	Sheet	0.06	-423	L-T	73.8	15.930	0.061	5.060	6.410	---	26.30	79.13	78.8	0.5	92.91	90.6	3.2	1966	69759		
		0.06			73.8	15.990	0.062	5.000	5.980	---	26.30	78.49			88.35					1966	69759
T87	Sheet	0.06		L-T	64.5	5.500	0.068	0.620	---	---	57.10	56.80*	---	---	---	---	---	1971	80104		
		0.06			64.5	5.500	0.068	0.330	---	---	63.20	45.60*			---					1971	80104
		0.06	-320		64.5	5.500	0.068	0.480	---	---	60.20	52.52*			---					1971	80104
		0.06			64.5	5.500	0.069	0.420	---	---	61.50	50.13*			---					1971	80104
T87	Sheet	0.06		L-T	64.5	6.700	0.067	0.880	---	---	55.90	66.43*	---	---	---	---	---	1971	80104		
		0.06	-320		64.5	6.700	0.068	1.000	---	---	54.60	69.39*			---					1971	80104
		0.06			64.5	6.700	0.069	1.200	---	---	51.10	71.58*			---					1971	80104
T87	Sheet	0.10	R.T.	L-T	58.5	3.500	0.100	0.750	0.980	---	46.40	51.84*	---	---	60.52*	---	---	1962	62306		
T87	Sheet	0.06		L-T	55.0	5.500	0.067	0.520	---	---	49.80	45.26*	---	---	---	---	---	1971	80104		
		0.06			55.0	5.500	0.067	0.400	---	---	51.30	40.80*			---					1971	80104
		0.06	R.T.		55.0	5.500	0.068	0.620	---	---	47.90	47.64*			---					1971	80104
		0.06			55.0	5.500	0.068	0.330	---	---	52.50	37.88*			---					1971	80104
T87	Sheet	0.10	R.T.	L-T	58.5	6.000	0.100	2.000	2.460	---	34.60	65.90*	---	---	76.06*	---	---	1962	62306		

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.11.2.2 (CONTINUED)

ALUMINUM 2219 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _i	MAX (Ksi) σ _{max}	K _{app} (Ksi/in)	K _{app} MEAN	STAN DEV	K _C (Ksi/in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES RESTRAINED																			
T87	Sheet	0.06	R.T.	L-T	55.0	6.700	0.067	0.910	---	---	47.30	57.20*	---	---	---	1971	80104		
		0.06			55.0	6.700	0.068	1.000	---	---	46.10	58.58*					---	---	80104
		0.06			55.0	6.700	0.068	1.190	---	---	43.40	60.52*							80104
T87	Sheet	0.10	R.T.	L-T	58.5	12.000	0.100	2.000	2.680	---	41.30	74.48*	---	---	---	1962	62306		
		0.10			58.5	12.000	0.100	4.000	4.770	---	27.90	75.15				1962	62306		
T87	Sheet	0.10	R.T.	L-T	58.5	24.000	0.100	20.00	20.650	---	6.40	70.51	78.8	11.1	90.6	1962	62306		
		0.10			58.5	24.000	0.100	4.000	5.730	---	33.90	86.46				1962	62306		
		0.10			58.5	24.000	0.100	8.000	9.580	---	24.00	91.42				1962	62306		
		0.10			58.5	24.000	0.100	18.00	19.430	---	7.40	63.61				1962	62306		
		0.10			58.5	24.000	0.100	18.00	18.620	---	8.40	72.20				1962	62306		
		0.10			58.5	24.000	0.100	12.00	13.650	---	17.80	91.90				1962	62306		
		0.10			58.5	24.000	0.100	2.000	2.590	---	42.40	75.48				1962	62306		
		0.10			58.5	24.000	0.100	1.000	1.400	---	48.40	60.73*				1962	62306		
		0.10			58.5	24.000	0.100	0.500	0.770	---	54.40	48.22*				1962	62306		
		0.10			58.5	30.000	0.100	18.00	19.700	---	12.50	86.70				1962	62306		
T87	Sheet	0.10	R.T.	L-T	58.5	36.000	0.100	4.000	5.450	---	34.00	85.88	---	---	1962	62306			
T87	Sheet	0.10	R.T.	L-T	58.5	48.000	0.100	4.000	5.580	---	34.90	87.86	98.8	12.4	109.8	1962	62306		
		0.10			58.5	48.000	0.100	12.00	15.050	---	23.20	104.79				1962	62306		
		0.10			58.5	48.000	0.100	36.00	37.170	---	7.90	96.03				1962	62306		

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.11.2.2 (CONTINUED)

ALUMINUM 2219 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _o	FINAL (in.) 2a _f	ONSET (Ksi) σ _s	MAX (Ksi) σ _u	K _{app} (Ksi/in.)	K _{app} MEAN	STAN DEV	K _C (Ksi/in.)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES RESTRAINED																				
T87 Cont'd	Sheet Cont'd	0.10			58.5	48.000	0.100	41.90	43.180	---	4.30	78.34			89.35				1962	62306
		0.10			58.5	48.000	0.100	24.00	25.720	---	15.40	112.45			119.93				1962	62306
		0.10			58.5	48.000	0.100	8.000	9.250	---	28.20	101.71			110.02				1962	62306
		0.10			58.5	48.000	0.100	12.00	14.200	---	24.50	110.66			122.38				1962	62306
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T87	Sheet	0.03	-423	L-T	74.0	12.000	0.032	1.210	2.020	---	48.10	66.73	---	---	87.21	---	---	---	1966	66103
T87	Sheet	0.12	-423	L-T	74.0	12.000	0.125	1.230	1.940	---	46.20	64.64	---	---	81.97	---	---	---	1966	66103
T87	Sheet	0.03	-423	L-T	74.0	16.000	0.032	4.240	7.030	---	27.80	75.02	---	---	105.20	---	---	---	1966	66103
T87	Sheet	0.12	-423	L-T	74.0	16.000	0.125	4.830	6.310	---	26.90	78.55	---	---	93.86	---	---	---	1966	66103
T87	Sheet	0.06	R.T.	L-T	59.2	2.000	0.064	0.625	1.080	---	37.80	39.84*			60.54*				1973	86213
		0.06			59.2	2.000	0.064	0.622	0.810	---	38.10	40.08*			47.92*				1973	86213
		0.06			59.2	2.000	0.064	0.623	0.880	---	37.80	39.76*			50.63*				1973	86213
		0.06			59.2	2.000	0.064	0.609	0.940	---	38.70	40.13*			54.68*				1973	86213
T87	Sheet	0.06	R.T.	L-T	59.2	2.000	0.065	0.625	1.110	---	38.10	40.16*			62.72*				1973	86213
		0.12			58.1	2.990	0.125	0.993	1.250	---	36.40	48.79*			57.31*				1973	86213
		0.12			54.7	3.000	0.125	1.090	1.820	---	32.50	46.36*			72.20*				1973	86213
		0.12			54.7	3.000	0.125	1.080	1.800	---	32.50	46.07*			71.28*				1973	86213
T87	Sheet	0.12	R.T.	L-T	58.1	3.000	0.125	0.992	1.200	---	36.20	48.50*			55.26*				1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.11.2.2 (CONTINUED)

ALUMINUM 2219 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _y	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T87 Cont'd	Sheet Cont'd	0.12	R.T.	L-T	58.1	2.990	0.126	0.995	1.300	---	35.90	48.18*	Cont'd	Cont'd	58.25*	Cont'd	Cont'd	1973	86213
		0.12	Cont'd	Cont'd	58.1	2.990	0.126	0.992	1.250	---	36.30	48.66*	Cont'd	Cont'd	57.15*	Cont'd	Cont'd	1973	86213
T87	Sheet	0.06	R.T.	L-T	57.7	15.930	0.061	5.000	6.280	---	22.80	68.08	---	---	79.36	---	---	1966	69759
T87	Sheet	0.06	R.T.	L-T	57.7	16.290	0.062	5.000	6.360	---	21.50	64.01	66.3	3.2	75.15	75.9	1.1	1966	69759
		0.06			57.7	16.290	0.062	4.980	5.910	---	23.10	68.60			76.70				
T87	Plate	0.25	R.T.	L-T	57.6	3.000	0.247	1.000	1.680	---	34.30	46.19*	---	---	69.79*	---	---	1973	86213
		0.25			57.6	3.000	0.247	1.160	1.790	---	31.40	46.77*			68.43*				
		0.25			57.6	3.000	0.247	1.257	2.060	---	29.70	46.89*			77.72*				
		0.25			57.6	3.000	0.247	1.130	1.900	---	32.10	46.94*			75.14*				
T87	Plate	0.25	R.T.	L-T	56.0	4.000	0.244	1.330	2.250	---	32.40	50.30*	---	---	76.47*	---	---	1973	86213
		0.25			56.0	4.000	0.245	1.430	2.570	---	31.00	50.50*			85.35*				
		0.25			56.0	4.000	0.246	1.330	2.260	---	32.20	49.99*			76.35*				
		0.25			57.6	4.000	0.246	1.330	2.030	---	34.40	53.41*			73.49*				
		0.25			57.6	4.000	0.246	1.330	2.250	---	34.10	52.94*			80.49*				
		0.25			57.6	4.000	0.247	1.410	2.310	---	33.20	53.57*			80.58*				
T87	Plate	0.25	R.T.	L-T	56.0	4.000	0.255	1.330	2.180	---	32.40	50.30*	---	---	74.06*	---	---	1973	86213
		0.25			56.0	4.000	0.255	1.440	2.470	---	30.90	50.58*			80.95*				
		0.25			56.0	4.000	0.256	1.330	2.160	---	32.10	49.84*			72.71*				

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.11.2.2 (CONTINUED)

ALUMINUM 2219 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER	
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _i	MAX (Ksi) σ _{max}	K _{app} (Ksi√in) K _{app}	K _{app} MEAN	STAN DEV	K _C (Ksi√in) K _C	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T87	Sheet	0.06			59.0	2.000	0.064	0.623	0.900	---	36.10	37.97*			49.22*			1973	86213	
		0.06			59.0	2.000	0.064	0.625	0.960	---	36.70	38.68*			52.78*			1973	86213	
		0.06		R.T.	T-L	59.0	2.000	0.064	0.619	0.880	---	37.40	39.18*			50.09*		---	1973	86213
		0.06			59.0	2.000	0.064	0.622	0.870	---	36.50	38.39*			48.45*			1973	86213	
		0.06			59.0	2.000	0.064	0.625	0.980	---	36.50	38.47*			53.44*			1973	86213	
T87	Sheet	0.12			55.9	3.000	0.124	1.070	1.760	---	30.60	43.10*			65.43*			1973	86213	
		0.12			55.9	3.000	0.124	1.080	1.690	---	30.50	43.23*			62.44*			1973	86213	
		0.12		R.T.	T-L	58.6	2.990	0.126	0.991	1.280	---	33.90	45.38*			54.35*		---	1973	86213
		0.12			58.6	2.990	0.126	0.992	1.350	---	34.30	45.98*			57.34*			1973	86213	
		0.12			58.6	2.990	0.126	0.990	1.300	---	33.90	45.38*			55.00*			1973	86213	
T87	Plate	0.25			58.6	2.990	0.126	0.994	1.280	---	34.10	45.77*			54.67*			1973	86213	
		0.25			57.2	3.000	0.247	1.000	1.530	---	32.00	43.10*			59.47*			1973	86213	
		0.25		R.T.	T-L	57.2	3.000	0.247	1.160	1.740	---	29.20	43.50*			61.66*		---	1973	86213
		0.25			57.2	3.000	0.247	1.120	1.710	---	30.40	44.18*			63.01*			1973	86213	
		0.25			55.9	4.000	0.245	1.460	2.310	---	26.60	43.95			64.56*			1973	86213	
T87	Plate	0.25			55.9	4.000	0.246	1.330	2.060	---	28.70	44.66			62.14*			1973	86213	
		0.25		R.T.	T-L	55.9	4.000	0.246	1.330	2.120	---	28.60	44.40			63.62*		---	1973	86213
		0.25			57.2	4.000	0.246	1.330	2.040	---	30.80	47.82*			66.09*			1973	86213	
		0.25			57.2	4.000	0.246	1.440	2.170	---	29.00	47.47			65.99*			1973	86213	
		0.25			57.2	4.000	0.246	1.440	2.170	---	29.00	47.47			65.99*			1973	86213	

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.11.2.2 (CONCLUDED)

ALUMINUM 2219 K _C																		
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C		DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _y	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN			STAN DEV
BUCKLING OF CRACK EDGES NOT RESTRAINED																		
T87	Plate	0.25	R.T.	T-L	55.6	4.000	0.255	1.440	2.240	---	27.80	45.50	45.1	0.3	---	---	1973	86213
		0.25			55.6	4.000	0.255	1.330	2.060	---	28.90	44.87					1973	86213
		0.25			55.6	4.000	0.256	1.330	2.070	---	29.00	45.02					1973	86213

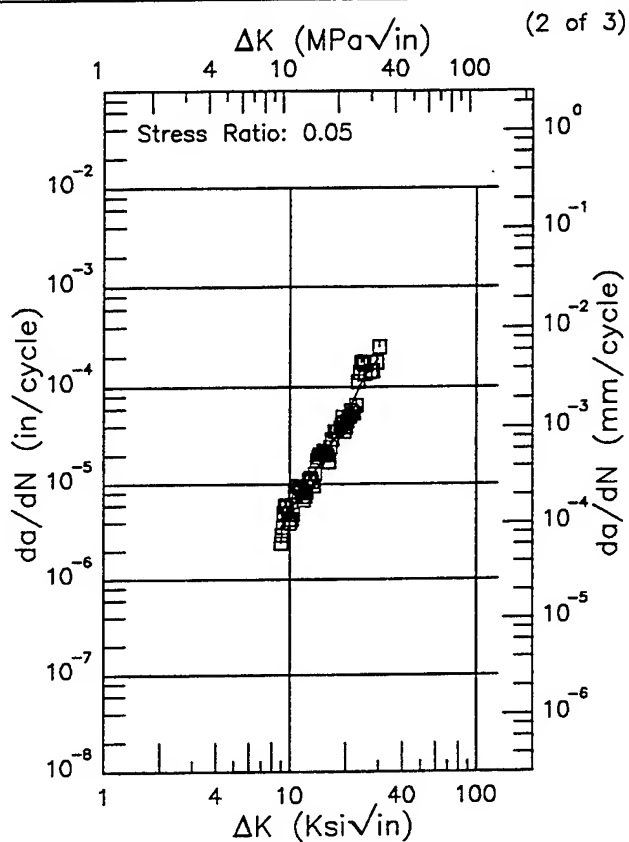
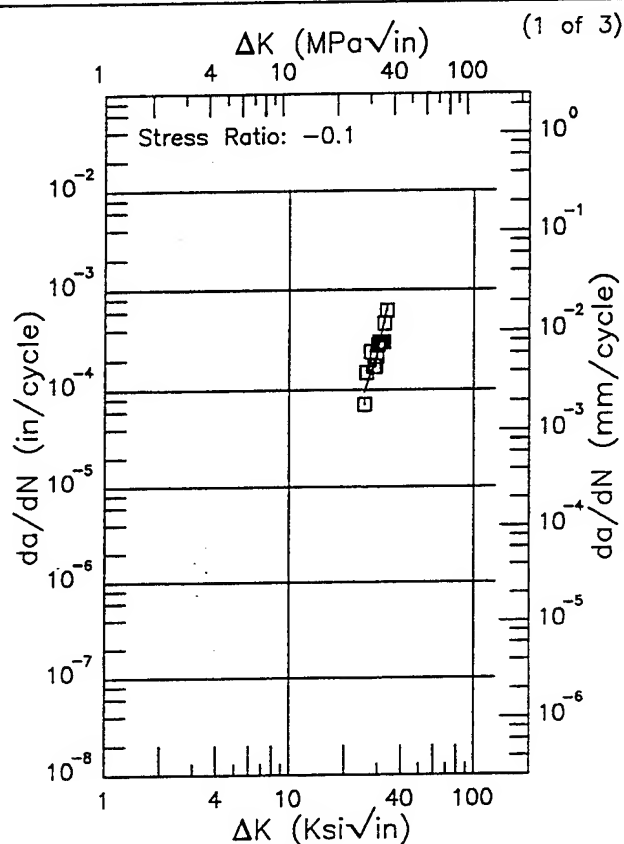
* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

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R 2219

Condition/Ht: T851
 Form: 0.63 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 - 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 54.7 ksi
 Ult. Strength: 66.9 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 2.5 in.
 Ref: 88468



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
25.44 (min)	94.6
30.	239.
33.66 (max)	683.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
8.91 (min)	3.42
9.	3.55
10.	5.18
13.	11.6
16.	21.7
20.	48.5
25.	121.
30.	193.
30.18 (max)	194.

RMS %
 Error
 24.47

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error
 22.16

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.11.3.1.1

Condition/Ht: T851
 Form: 0.63 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 - 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 54.7 ksi
 Ult. Strength: 66.9 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 2.5 in.
 Ref: 88468

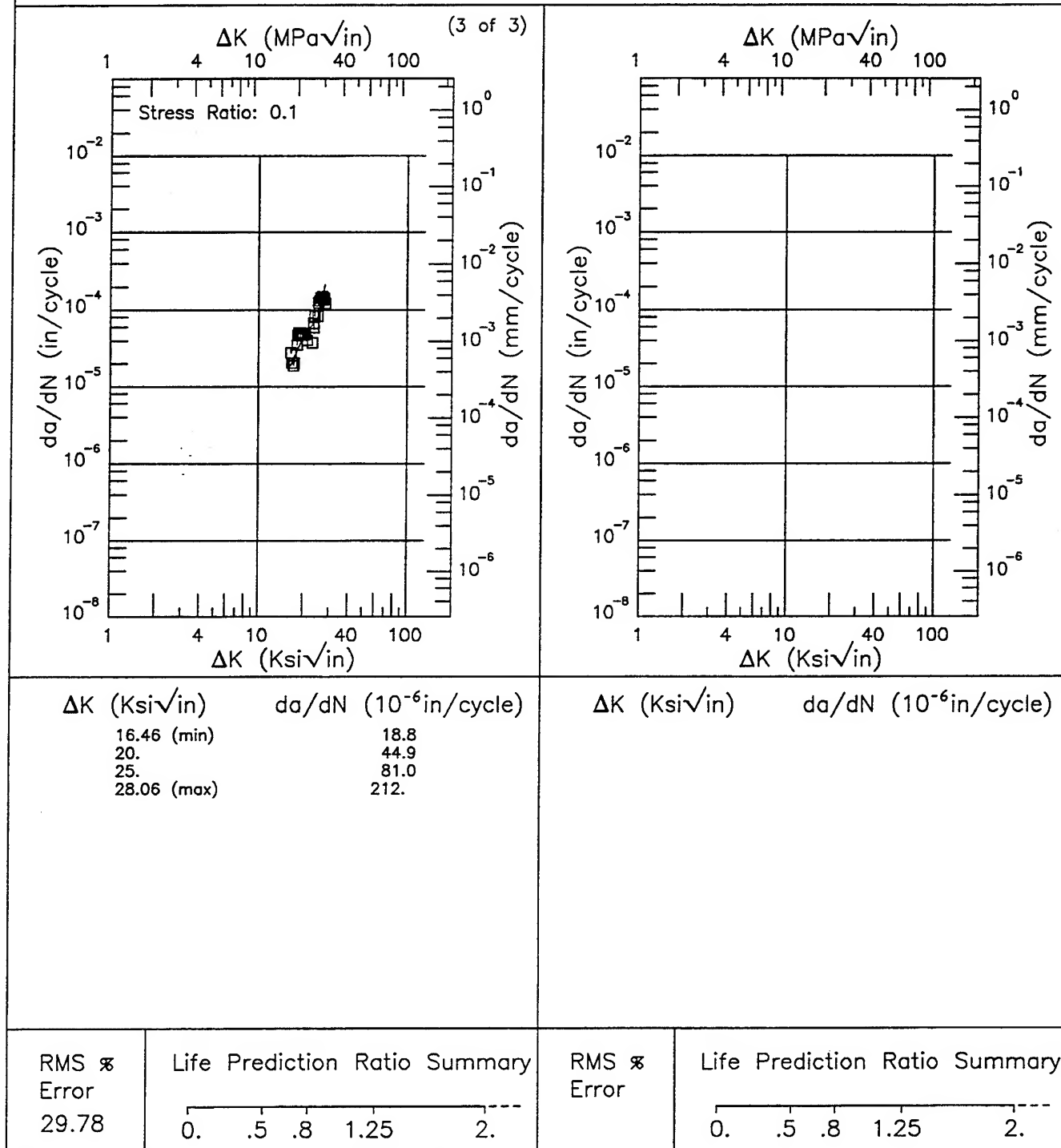


Figure 7.11.3.1.1 (Concluded)

R

2219

Condition/Ht: T851
 Form: 0.63 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 - 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 54.7 ksi
 Ult. Strength: 66.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 2.5 in.
 Ref: 88468

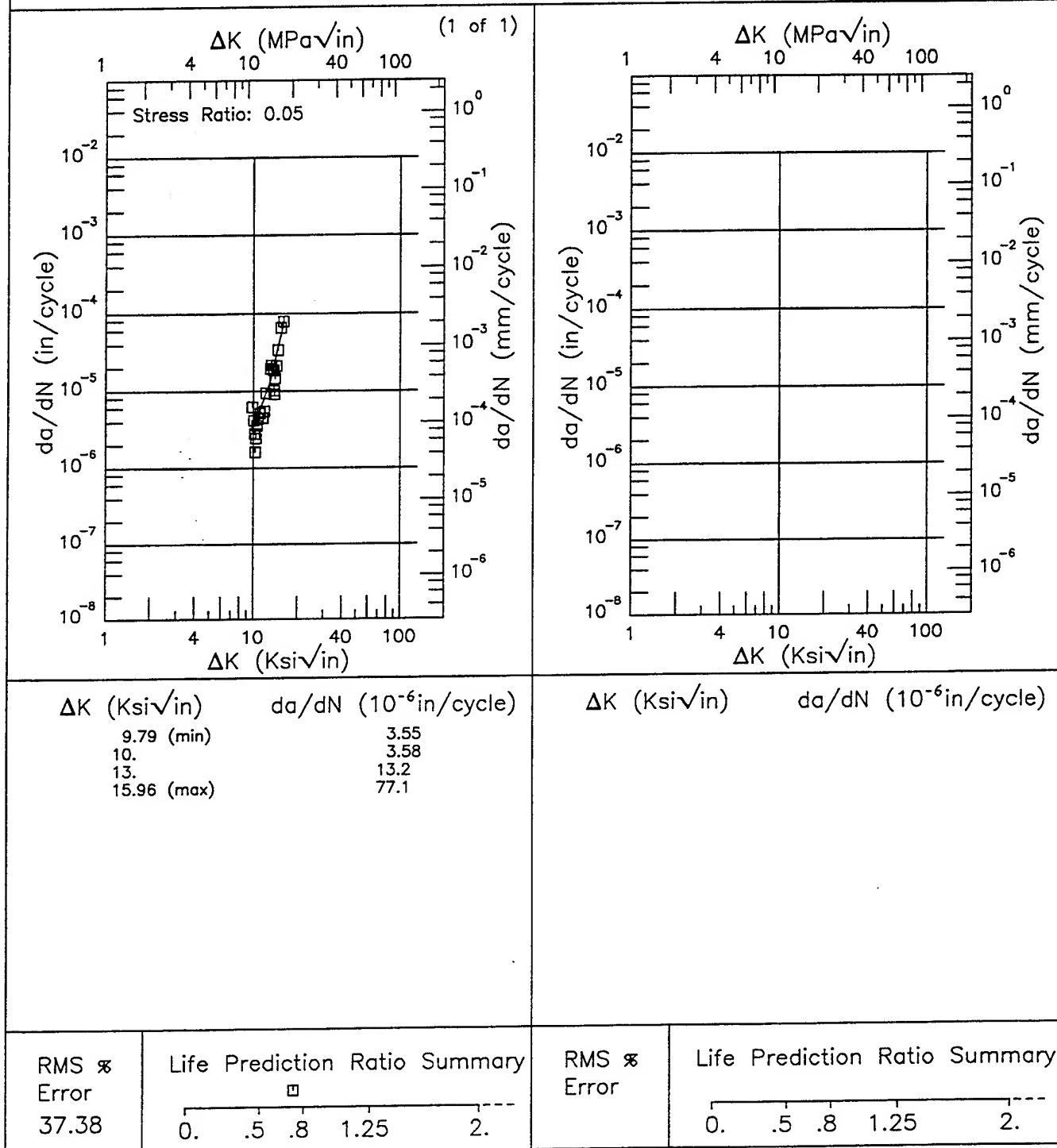


Figure 7.11.3.1.2

Condition/Ht: T851
 Form: 1.75 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.08
 Frequency: 0.1 Hz

Yield Strength: 50 ksi
 Ult. Strength: 66 ksi
 Specimen Thk: 0.994 - 1 in.
 Specimen Width: 6 - 6.01 in.
 Ref: 88579

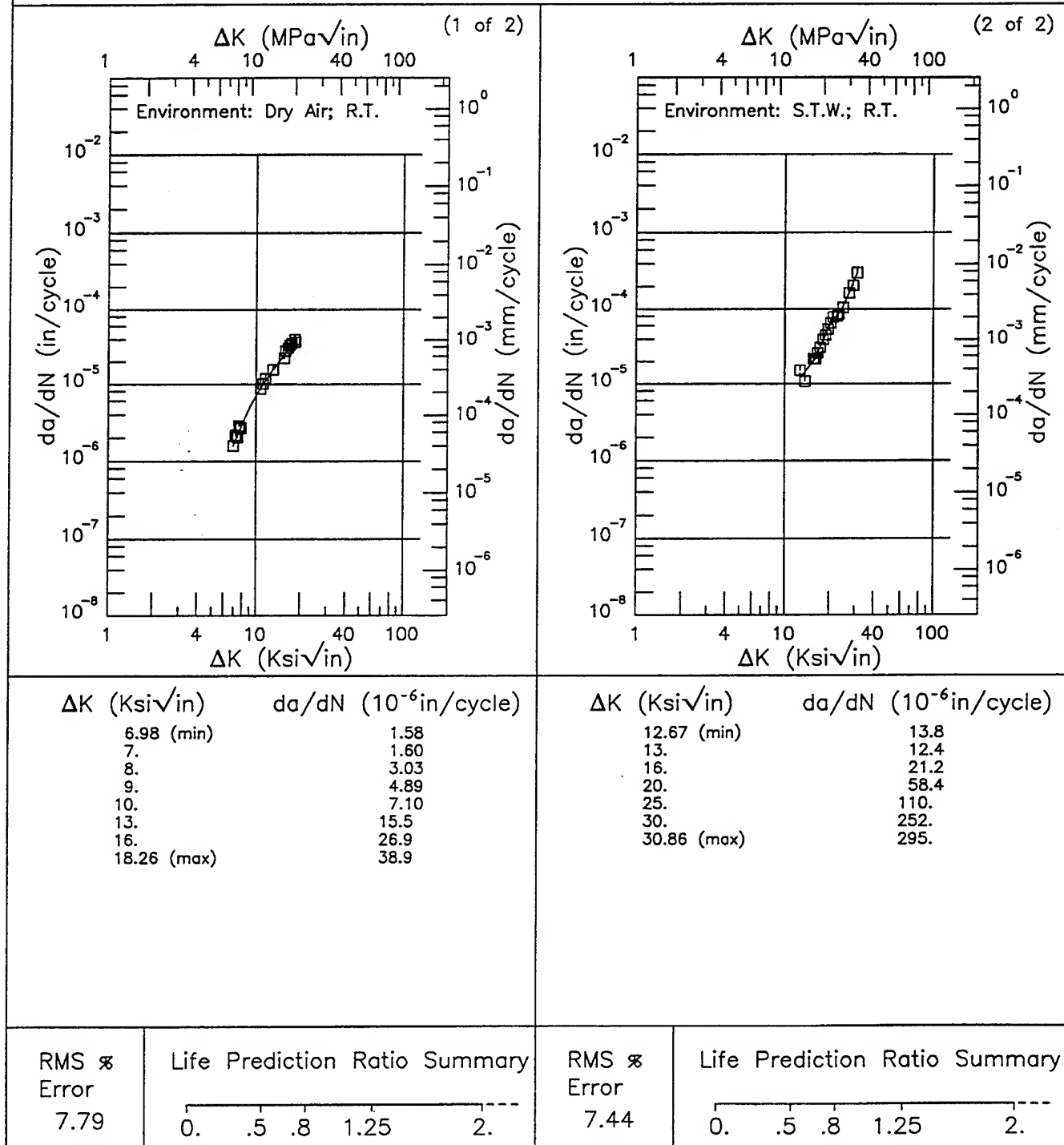


Figure 7.11.3.1.3

E 2219

Condition/Ht: T851
Form: 1.75 - 2 in. Plate
Specimen Type: CT
Orientation: L-T
Stress Ratio: 0.08
Frequency: 1 Hz

Yield Strength: 50 ksi
Ult. Strength: 66 - 68 ksi
Specimen Thk: 0.99 in.
Specimen Width: 6 - 6.01 in.
Ref: 88579

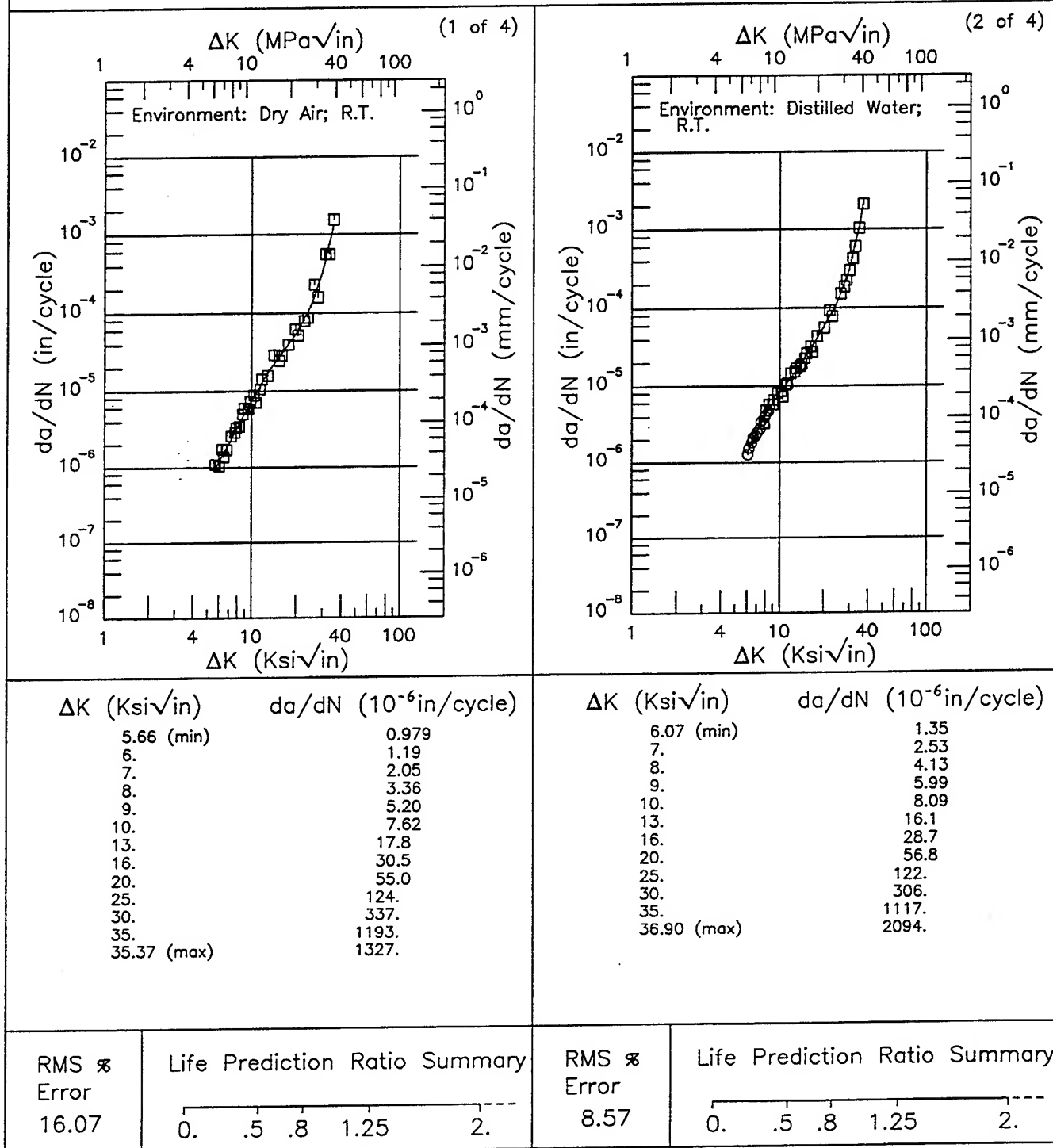


Figure 7.11.3.1.4

Condition/Ht: T851
 Form: 1.75 - 2 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.08
 Frequency: 1 Hz

Yield Strength: 50 ksi
 Ult. Strength: 66 - 68 ksi
 Specimen Thk: 0.99 in.
 Specimen Width: 6 - 6.01 in.
 Ref: 88579

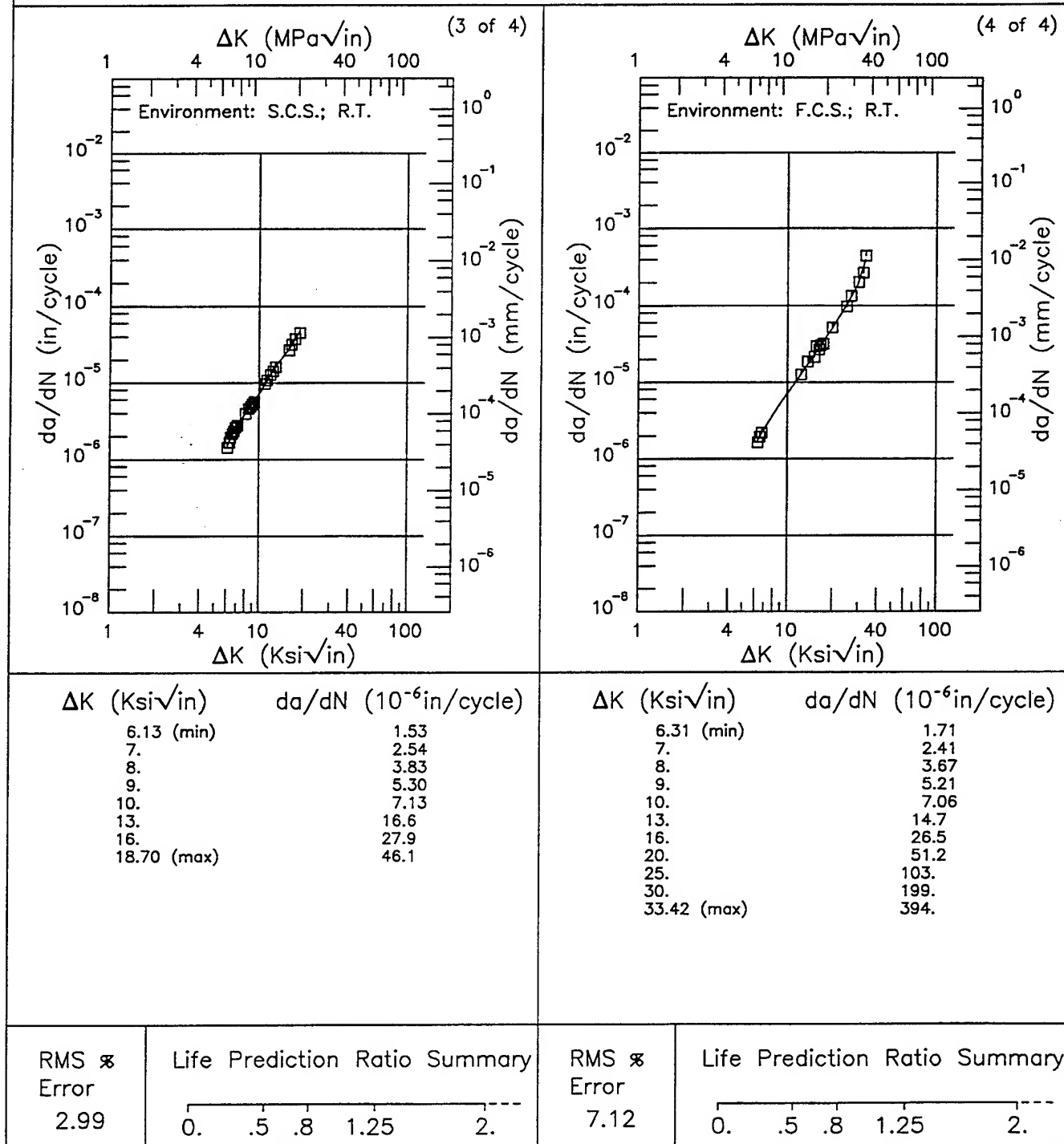
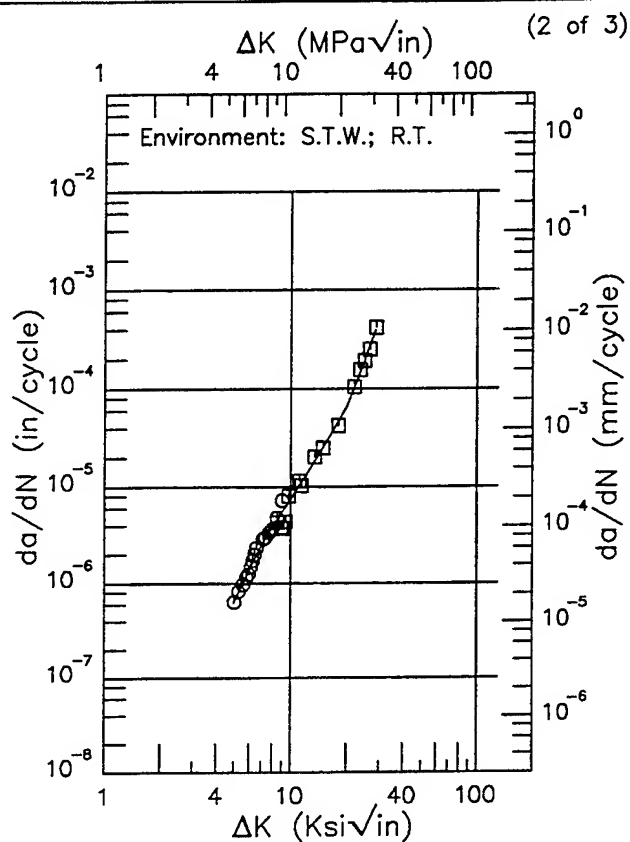
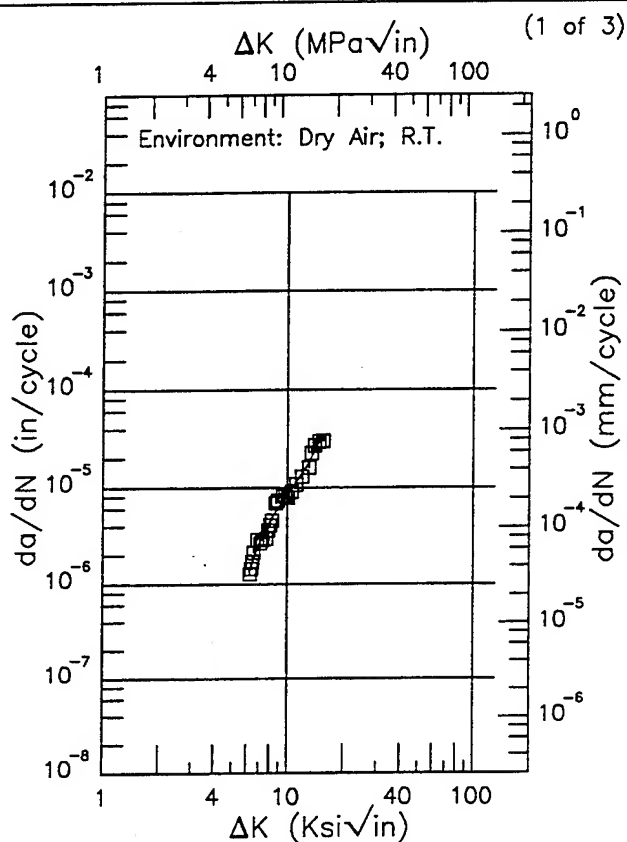


Figure 7.11.3.1.4 (Concluded)

E 2219

Condition/Ht: T851
 Form: 1.75 - 3 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.08
 Frequency: 1 Hz

Yield Strength: 49.6 - 54 ksi
 Ult. Strength: 66.2 - 69 ksi
 Specimen Thk: 0.99 - 0.998 in.
 Specimen Width: 7.4 in.
 Ref: 85837;88579



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.23 (min)	1.37
7.	2.57
8.	4.43
9.	6.40
10.	8.48
13.	17.7
15.42 (max)	35.6

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
4.99 (min)	0.624
5.	0.630
6.	1.39
7.	2.46
8.	3.82
9.	5.48
10.	7.50
13.	16.4
16.	31.1
20.	65.8
25.	203.
28.46 (max)	393.

RMS %
 Error
 12.03

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error
 13.44

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.11.3.1.5

Condition/Ht: T851
 Form: 1.75 - 3 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.08
 Frequency: 1 Hz

Yield Strength: 49.6 - 54 ksi
 Ult. Strength: 66.2 - 69 ksi
 Specimen Thk: 0.99 - 0.998 in.
 Specimen Width: 7.4 in.
 Ref: 85837;88579

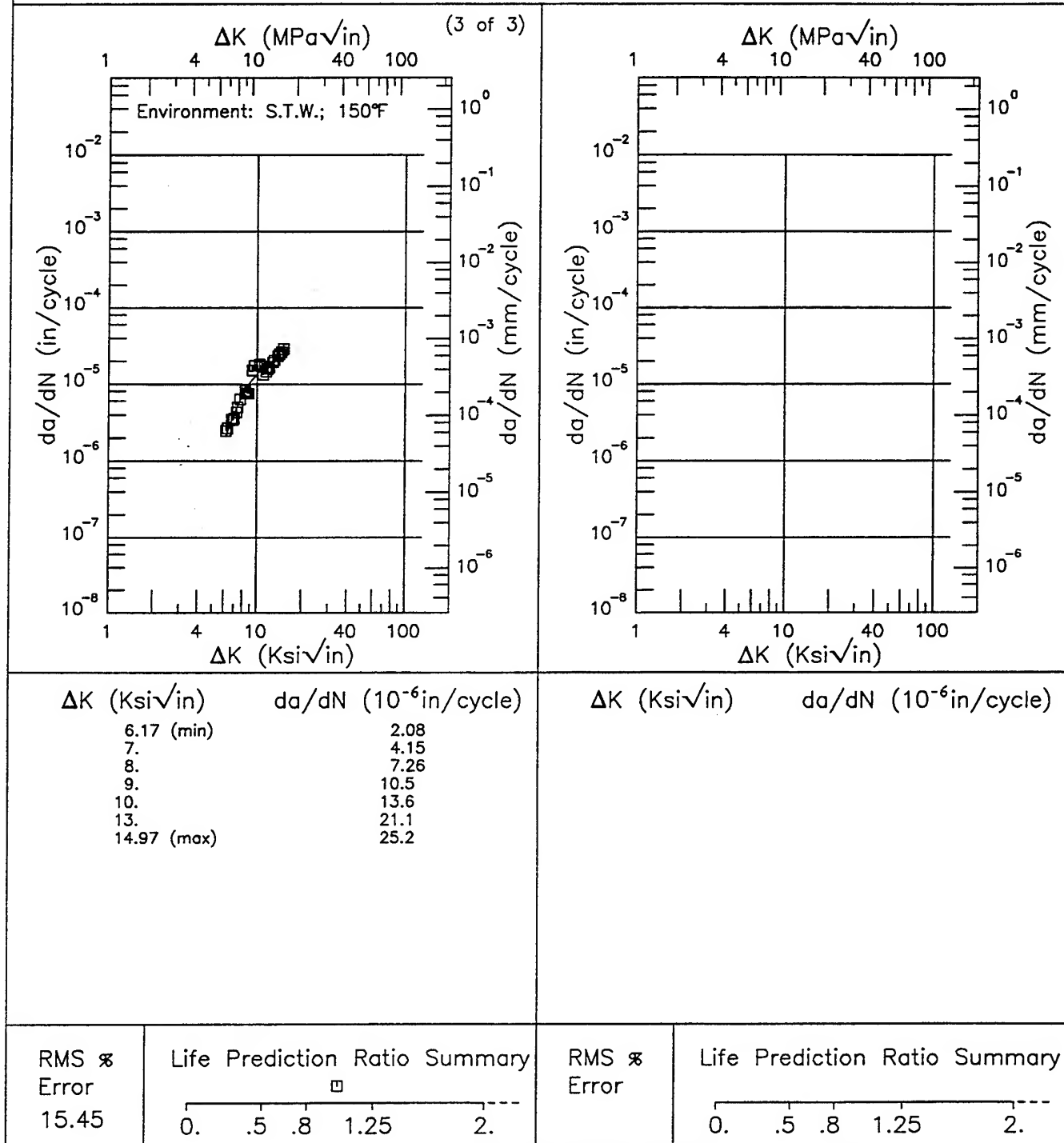
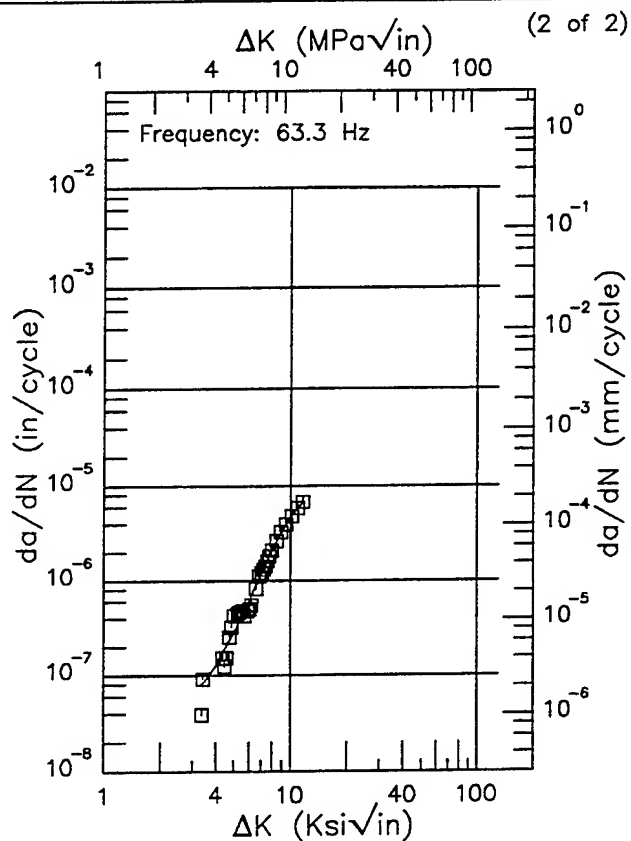
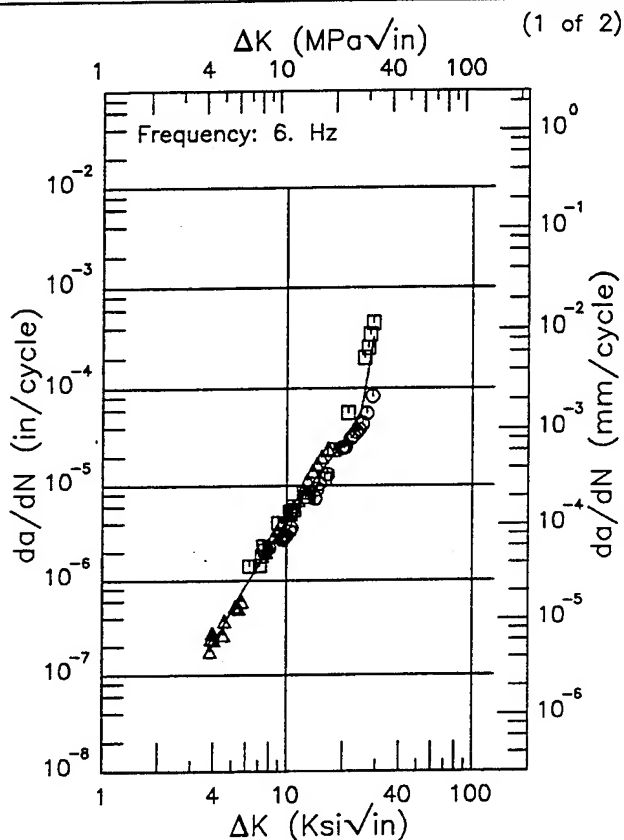


Figure 7.11.3.1.5 (Concluded)

F 2219

Condition/Ht: T851
 Form: 1.75 - 3 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.08
 Environment: DRY AIR; RT

Yield Strength: 49.6 - 54 ksi
 Ult. Strength: 66.2 - 69 ksi
 Specimen Thk: 0.993 - 1 in.
 Specimen Width: 7.4 in.
 Ref: 88579;85837



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
3.83 (min)	0.188
4.	0.220
5.	0.479
6.	0.882
7.	1.45
8.	2.21
9.	3.17
10.	4.35
13.	9.21
16.	16.1
20.	27.6
25.	60.3
28.98 (max)	328.

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
3.34 (min)	0.0795
3.5	0.0876
4.	0.125
5.	0.278
6.	0.599
7.	1.18
8.	2.08
9.	3.29
10.	4.67
11.59 (max)	6.57

RMS %
 Error
 31.93

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error
 19.33

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.11.3.1.6

Condition/Ht: T851
 Form: 1.75 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength: 50 ksi
 Ult. Strength: 66 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 5.99 in.
 Ref: 88579

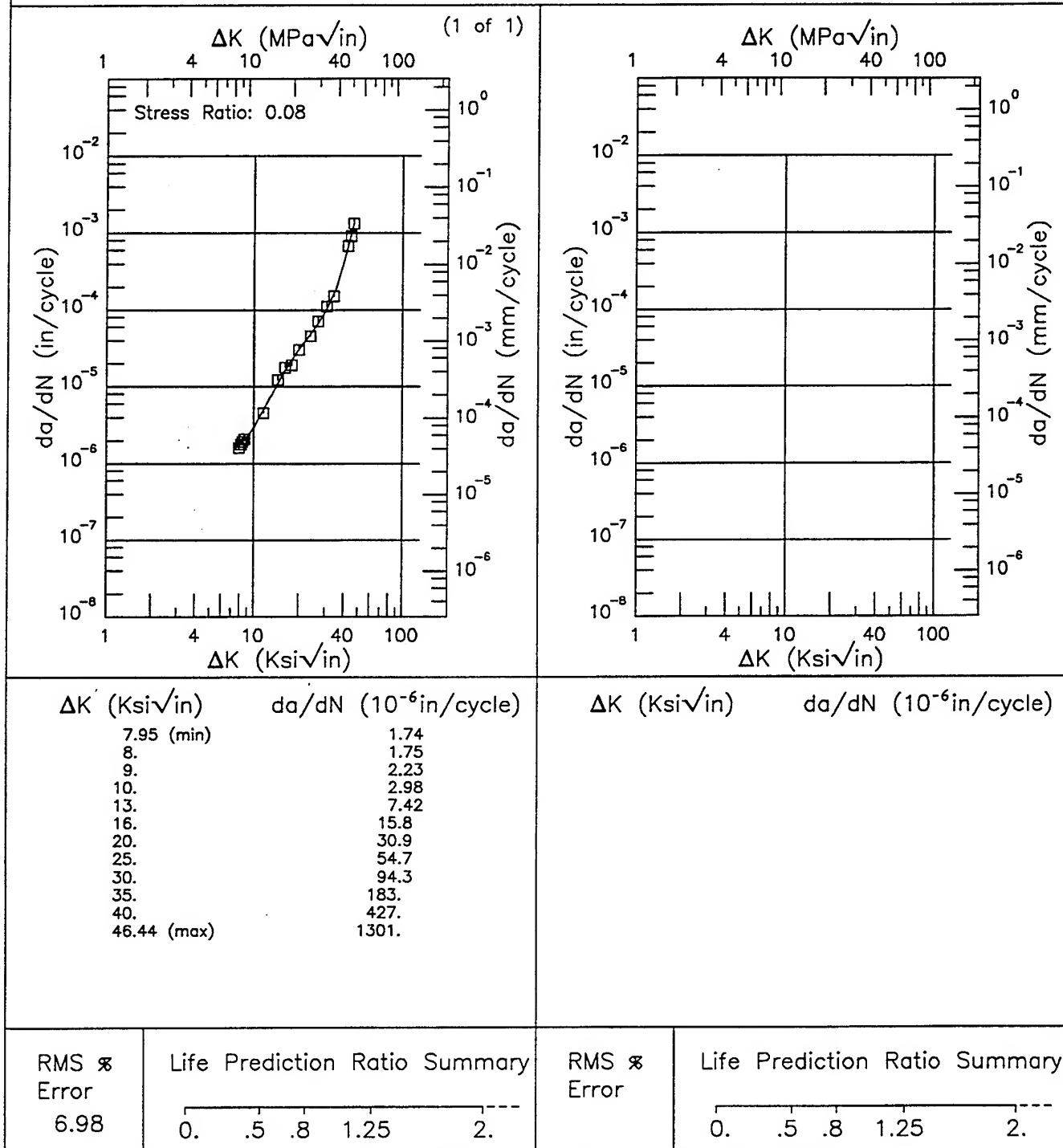


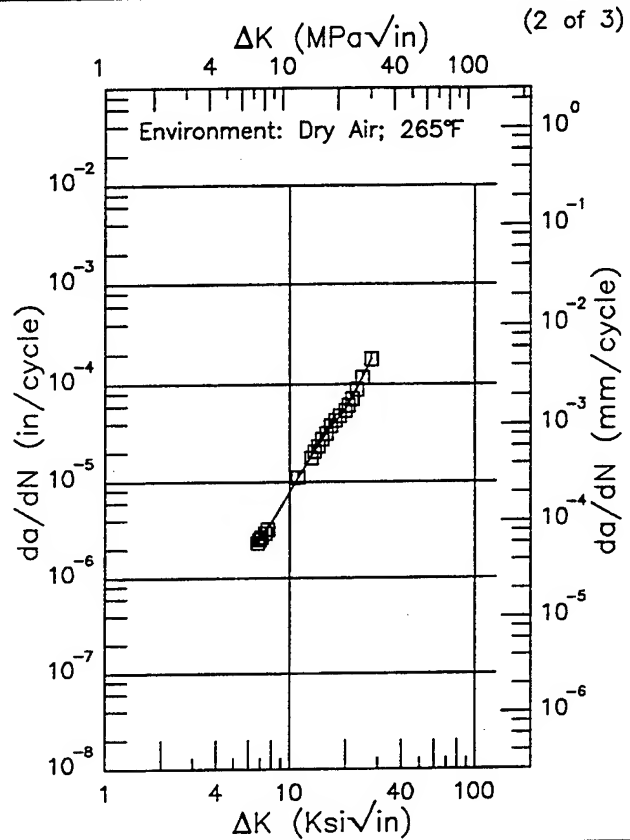
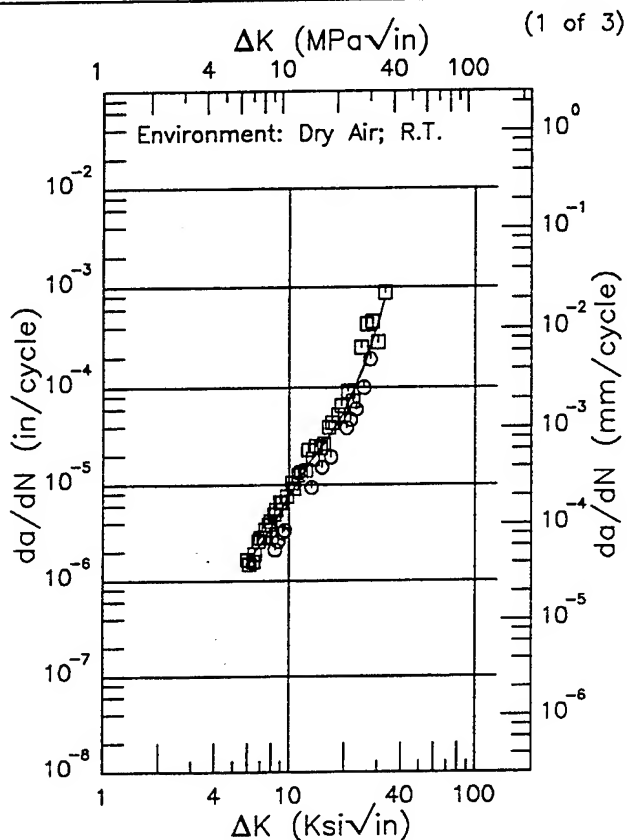
Figure 7.11.3.1.7

E

2219

Condition/Ht: T851
 Form: 1.75 - 2 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.08
 Frequency: 6 Hz

Yield Strength: 49.6 - 50 ksi
 Ult. Strength: 66 - 68 ksi
 Specimen Thk: 0.99 - 1 in.
 Specimen Width: 6 in.
 Ref: 88579;85837



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
5.95 (min)	1.57
6.	1.60
7.	2.39
8.	3.64
9.	5.40
10.	7.72
13.	17.2
16.	28.8
20.	57.0
25.	154.
30.	414.
32.68 (max)	754.

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
6.74 (min)	2.27
7.	2.52
8.	3.75
9.	5.47
10.	7.75
13.	18.2
16.	32.9
20.	56.3
25.	122.
27.51 (max)	178.

RMS %
 Error
 34.30

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error
 2.81

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.11.3.1.8

Condition/Ht: T851
 Form: 1.75 - 2 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.08
 Frequency: 6 Hz

Yield Strength: 49.6 - 50 ksi
 Ult. Strength: 66 - 68 ksi
 Specimen Thk: 0.99 - 1 in.
 Specimen Width: 6 in.
 Ref: 88579;85837

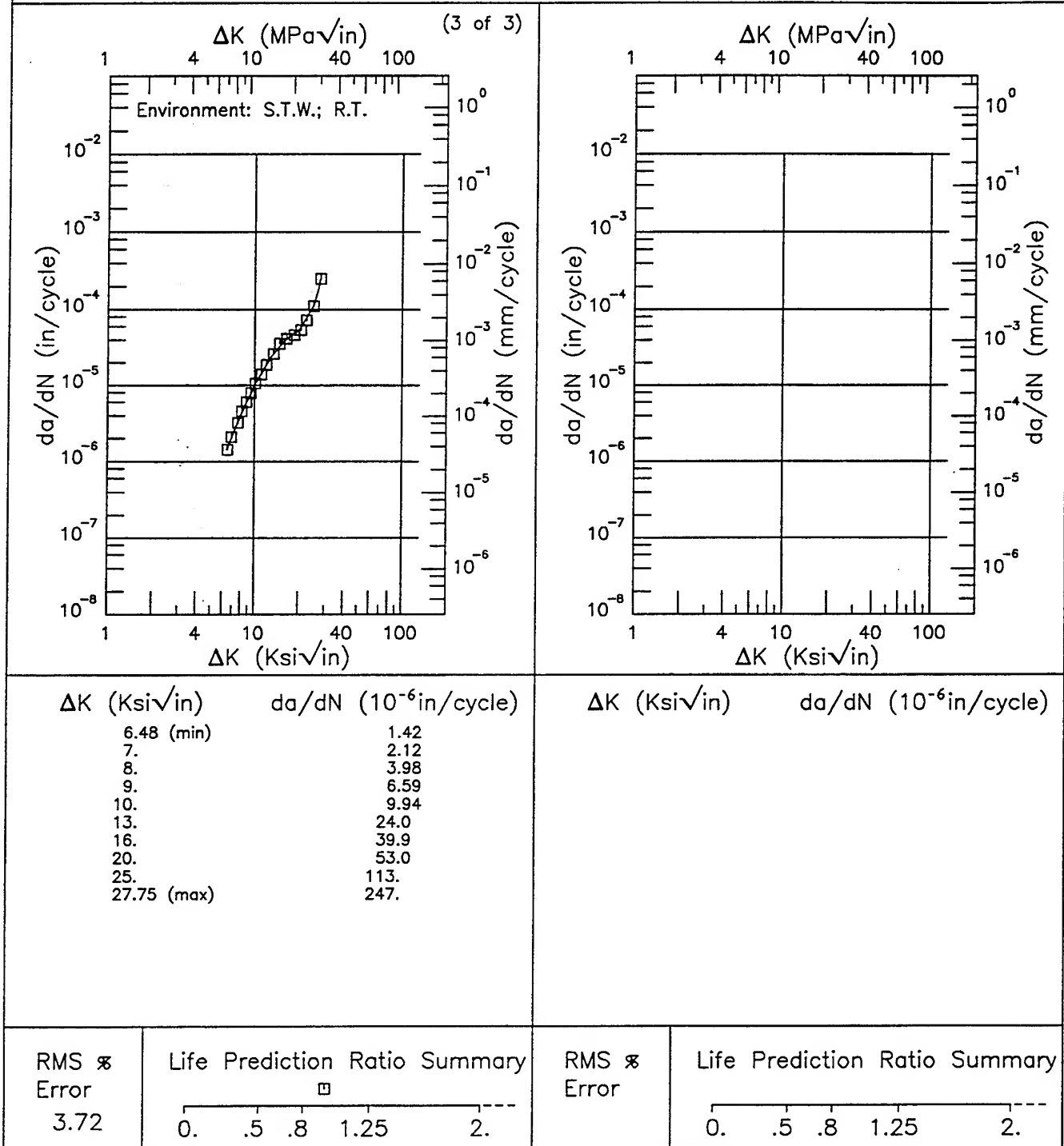


Figure 7.11.3.1.8 (Concluded)

R

2219

Condition/Ht: T851
 Form: 1.75 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength: 50 ksi
 Ult. Strength: 66 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 6 in.
 Ref: 88579

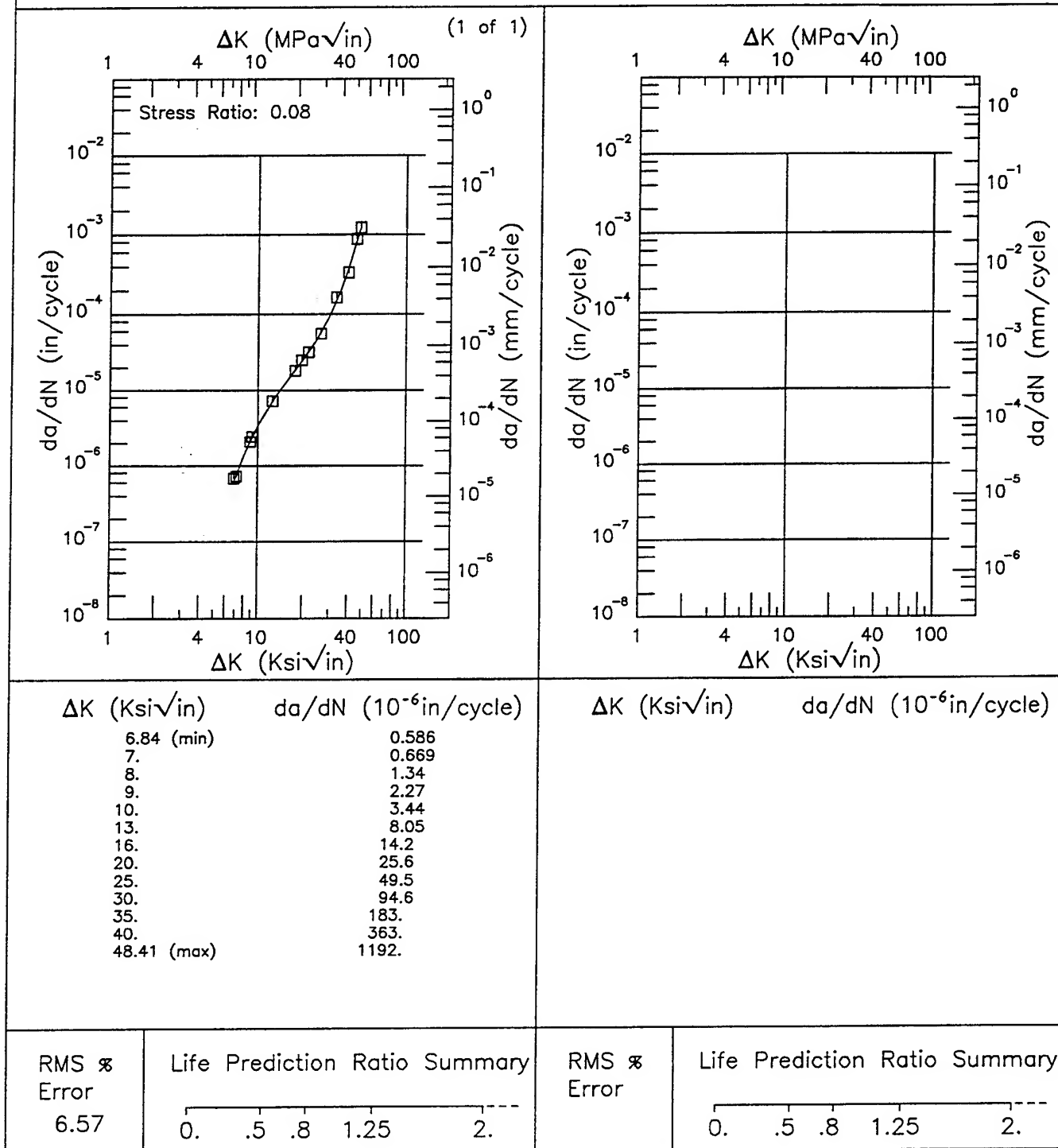


Figure 7.11.3.1.9

Condition/Ht: T851
 Form: 1.75 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 6 Hz
 Environment: LAB AIR; RT

Yield Strength: 50 ksi
 Ult. Strength: 66 ksi
 Specimen Thk: 0.995 in.
 Specimen Width: 2 in.
 Ref: 85837

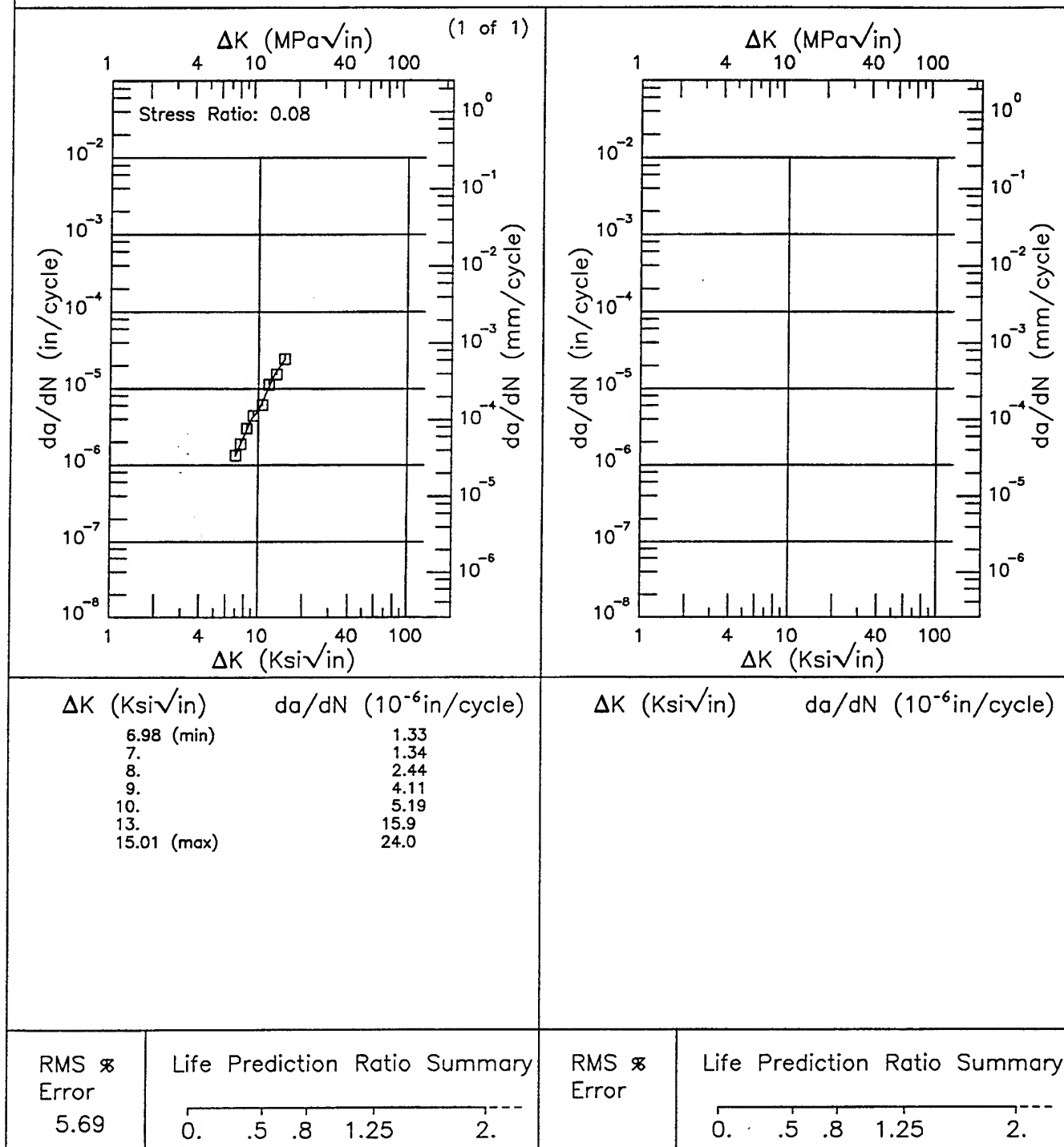


Figure 7.11.3.1.10

R

2219

Condition/Ht: T851
 Form: 1.75 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength: 48 – 49.6 ksi
 Ult. Strength: 65.9 – 66.2 ksi
 Specimen Thk: 1 in.
 Specimen Width: 6 – 6.01 in.
 Ref: 85837

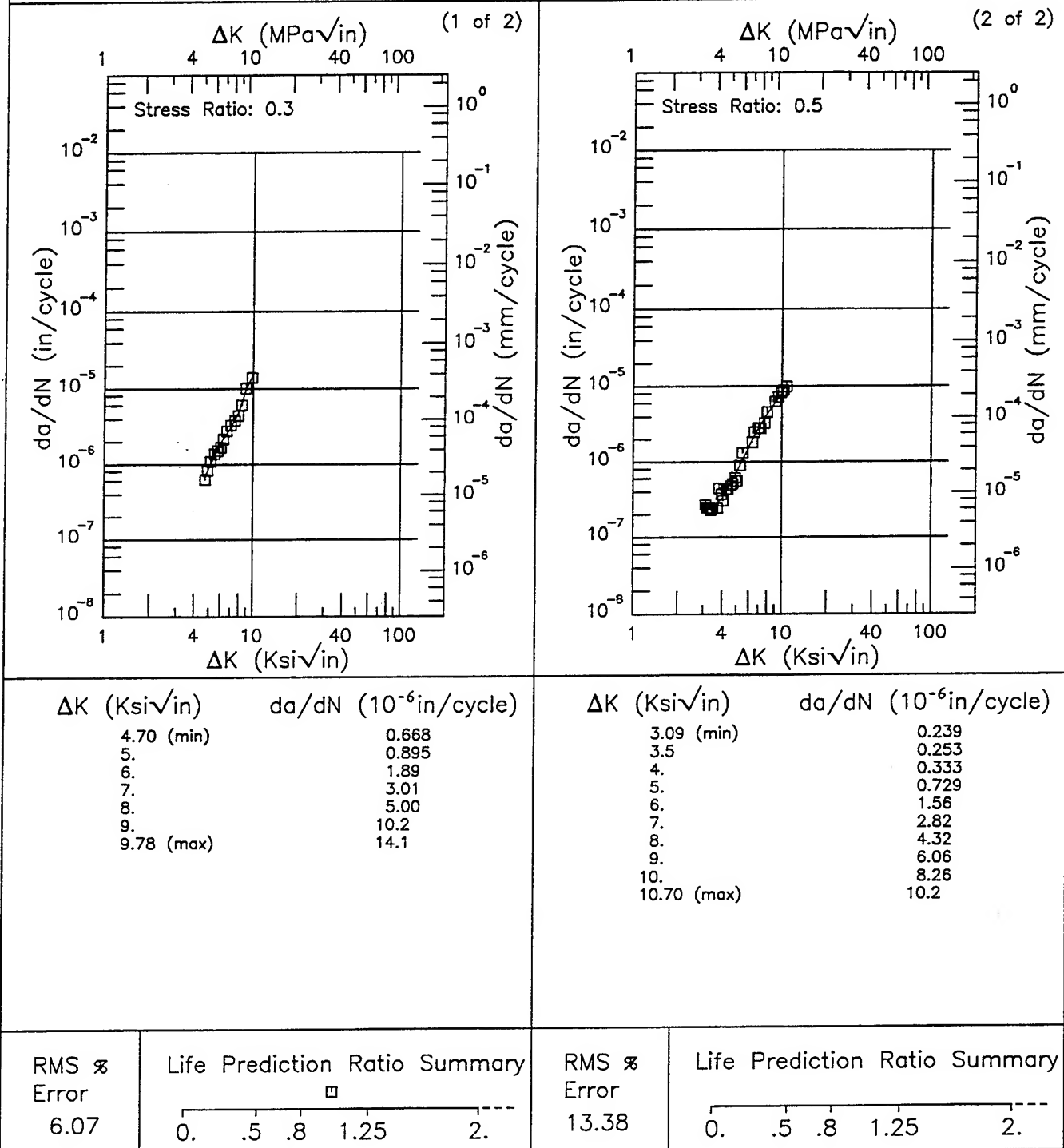


Figure 7.11.3.1.11

Condition/Ht: T851
 Form: 1.75 in. Plate
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 50 ksi
 Ult. Strength: 66 ksi
 Specimen Thk: 0.99 - 1 in.
 Specimen Width: 6 - 6.01 in.
 Ref: 88579

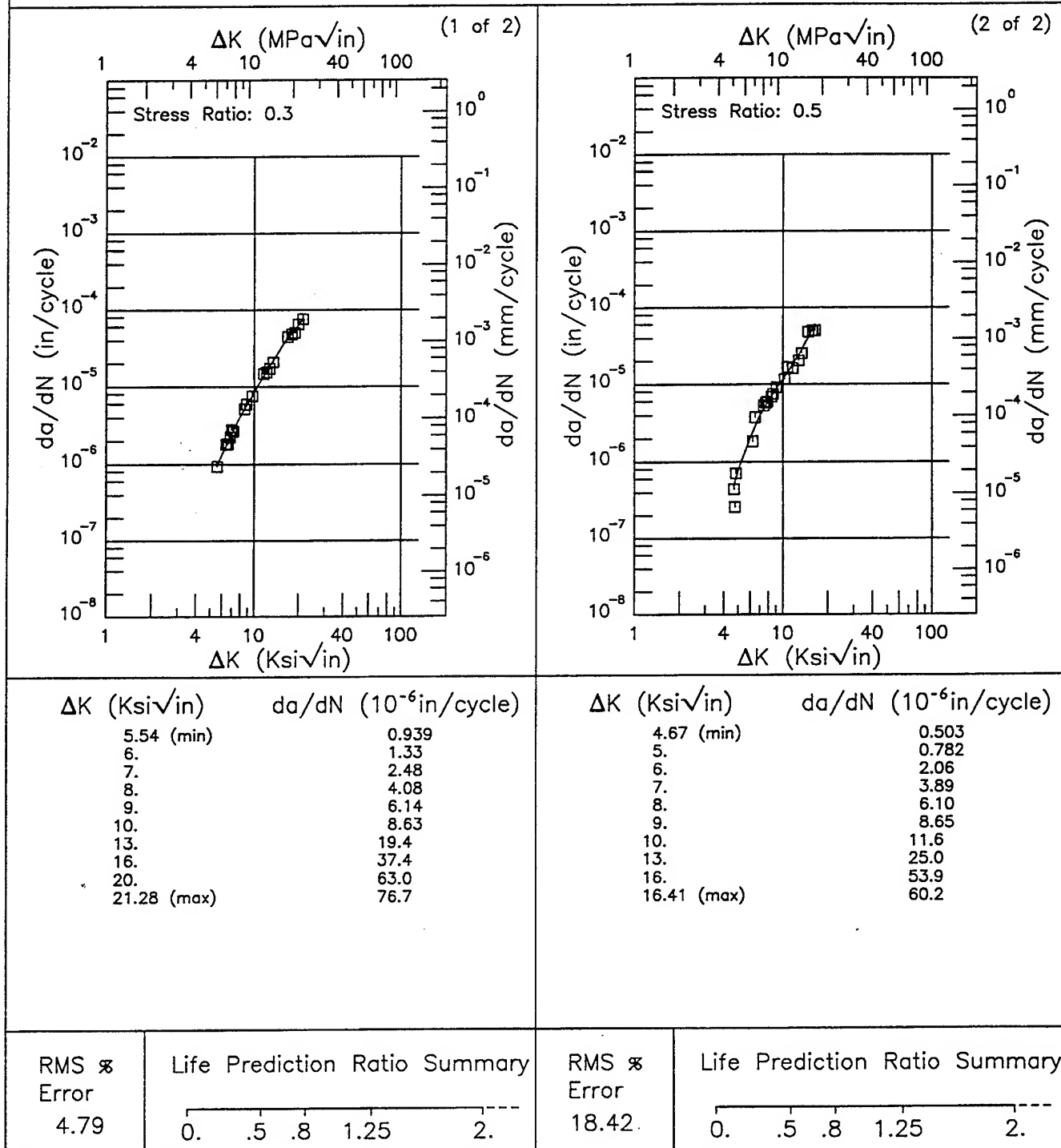


Figure 7.11.3.1.12

E

2219

Condition/Ht: T851
 Form: 1.75 - 2 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.08
 Frequency: 6 Hz

Yield Strength: 48 - 50 ksi
 Ult. Strength: 66 - 68 ksi
 Specimen Thk: 0.99 - 1 in.
 Specimen Width: 5.99 - 6 in.
 Ref: 88579

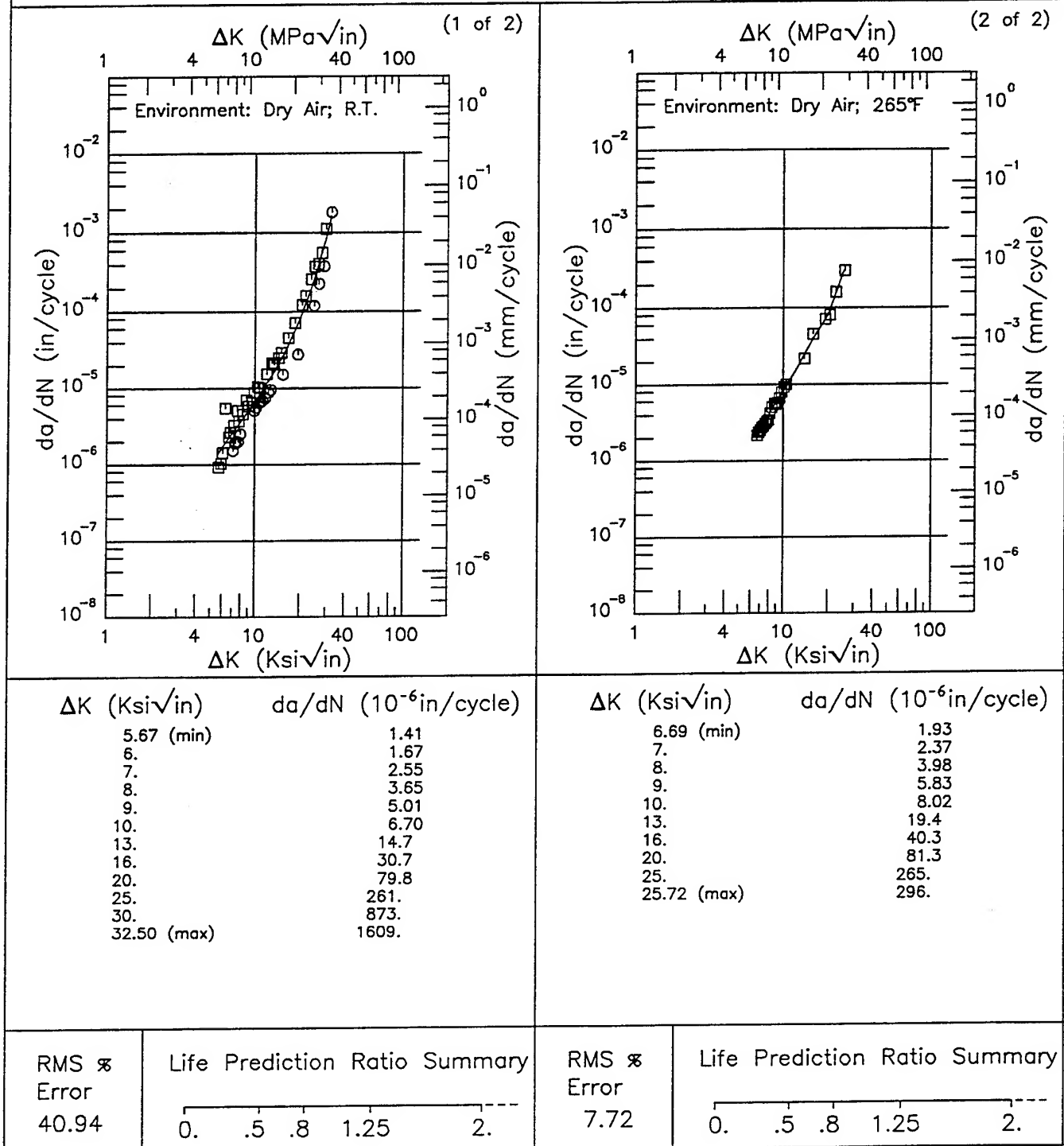


Figure 7.11.3.1.13

Condition/Ht: T851
 Form: 3 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 53 ksi
 Ult. Strength: 68 ksi
 Specimen Thk: 1 in.
 Specimen Width: 7.4 in.
 Ref: 88579

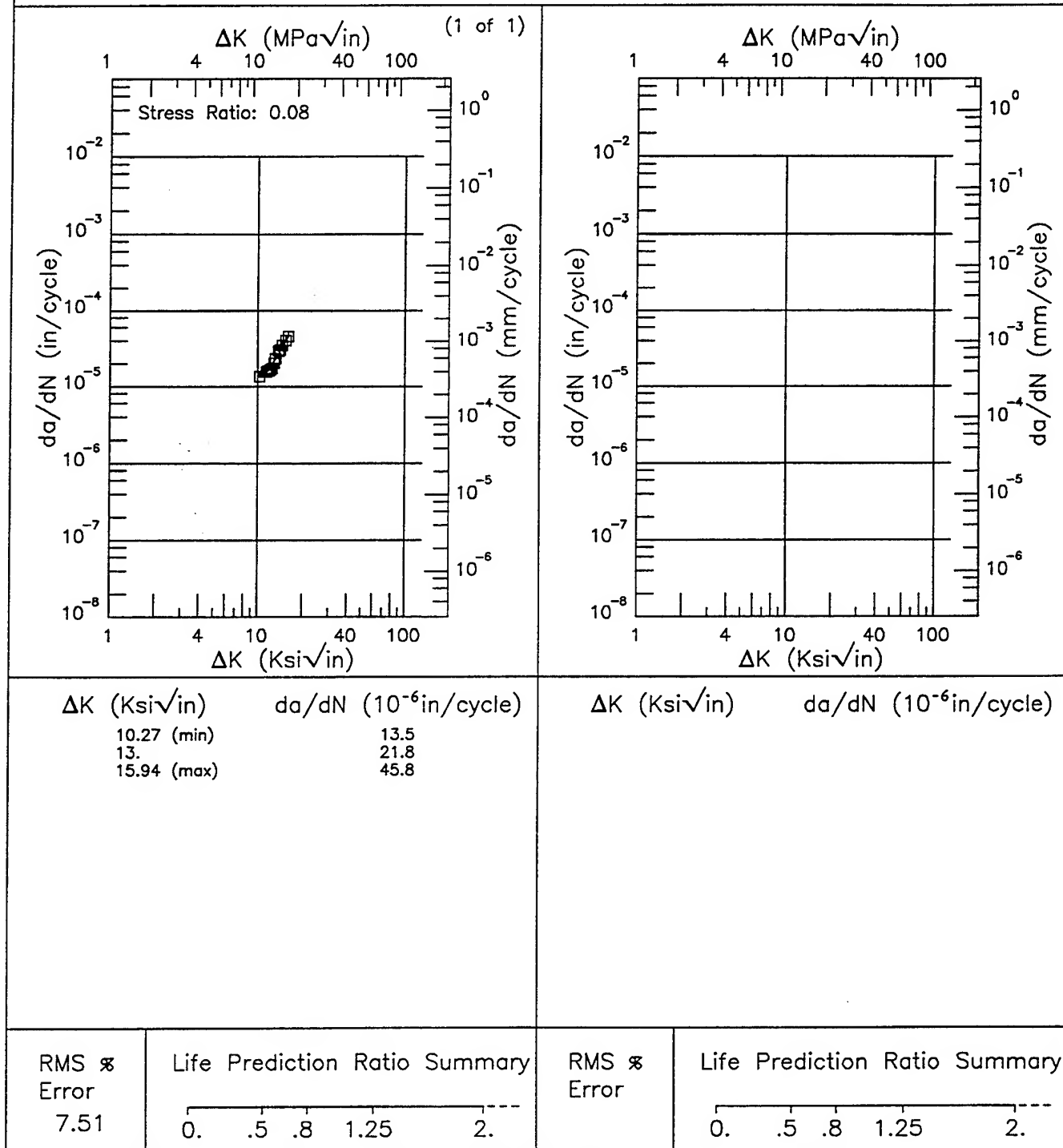


Figure 7.11.3.1.14

R 2219

Condition/Ht: T851
 Form: 1.75 in. Plate
 Specimen Type: CT
 Orientation: T-L
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 48 ksi
 Ult. Strength: 65.9 ksi
 Specimen Thk: 0.995 in.
 Specimen Width: 6.01 in.
 Ref: 85837

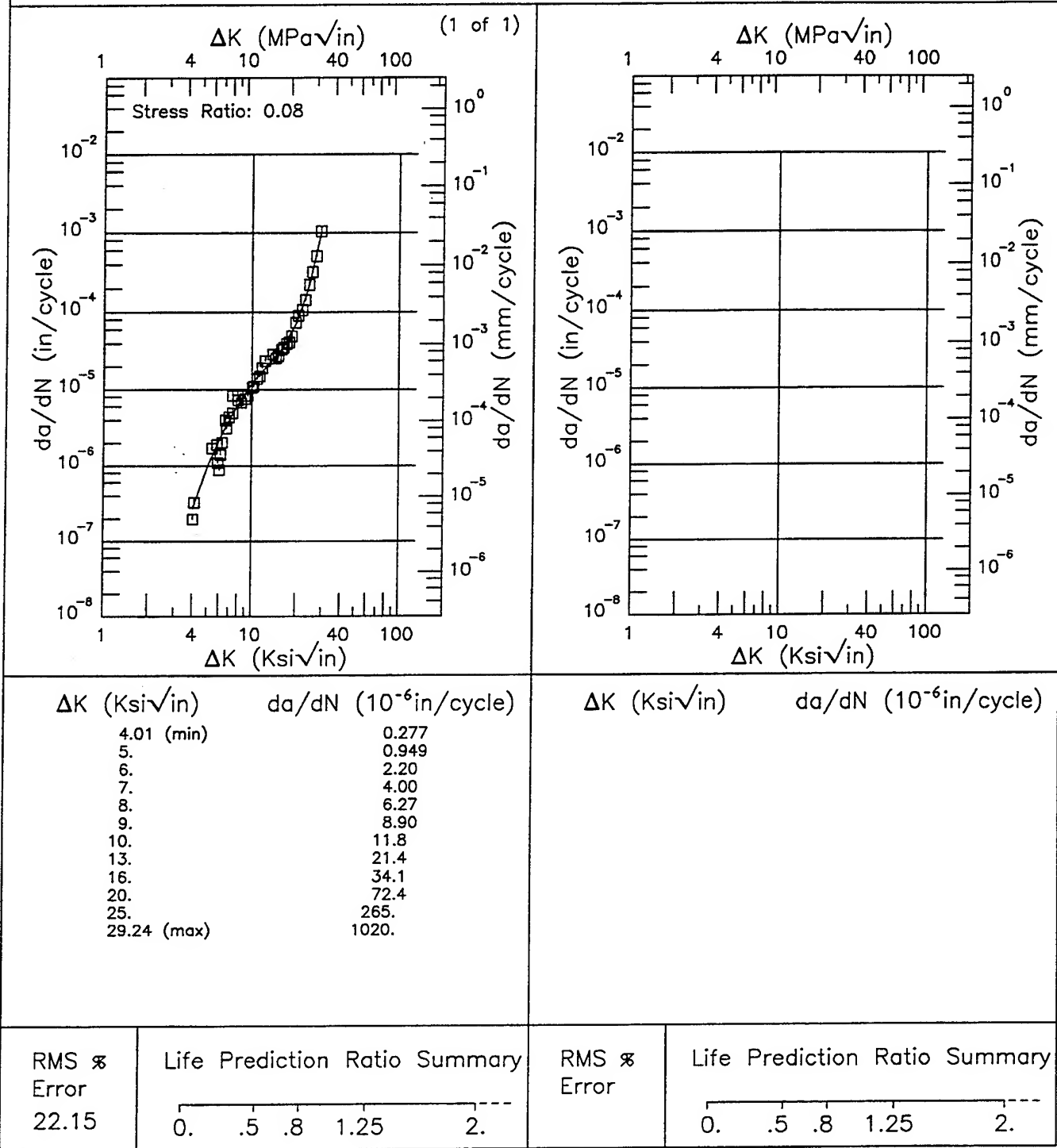


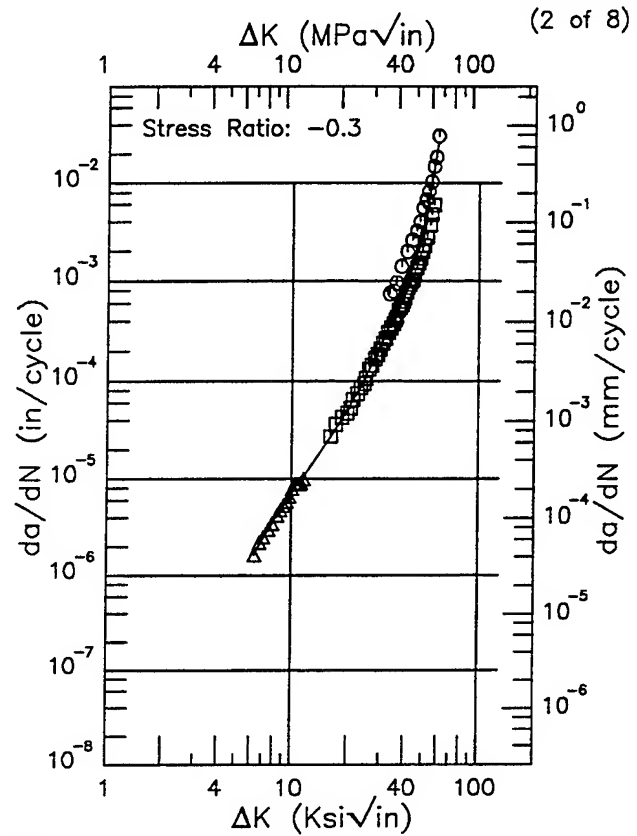
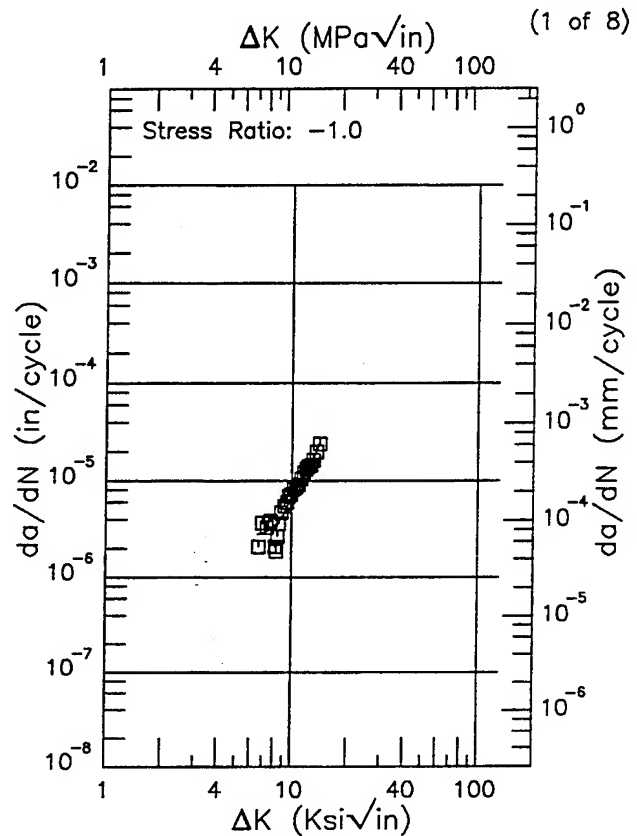
Figure 7.11.3.1.15

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R 2219

Condition/Ht: T851
 Form: 0.25 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 6 Hz
 Environment: LAB AIR; RT

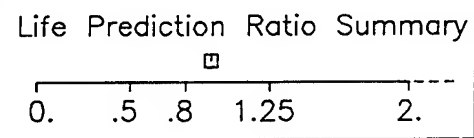
Yield Strength: 46 ksi
 Ult. Strength: 62 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 6 in.
 Ref: RI003



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
6.61 (min)	2.86
7.	2.92
8.	3.29
9.	4.40
10.	6.96
13.	16.0
14.09 (max)	25.2

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
6.34 (min)	1.68
7.	2.37
8.	3.64
9.	5.18
10.	7.01
13.	14.5
16.	26.1
20.	51.7
25.	113.
30.	236.
35.	461.
40.	842.
50.	2884.
59.68 (max)	26959.

RMS %
 Error
 17.95



RMS %
 Error
 39.04

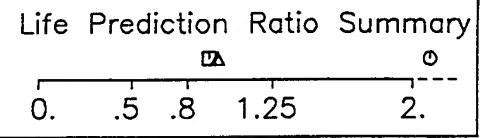
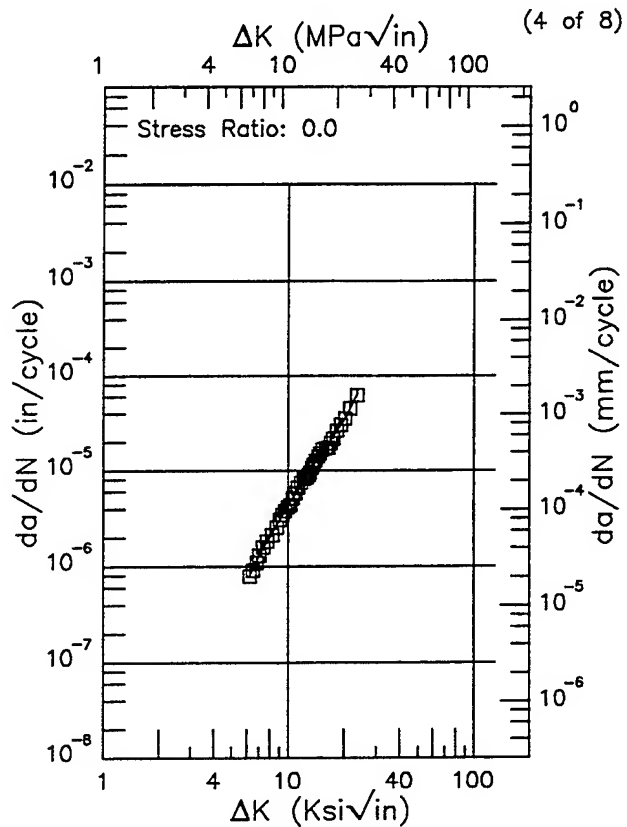
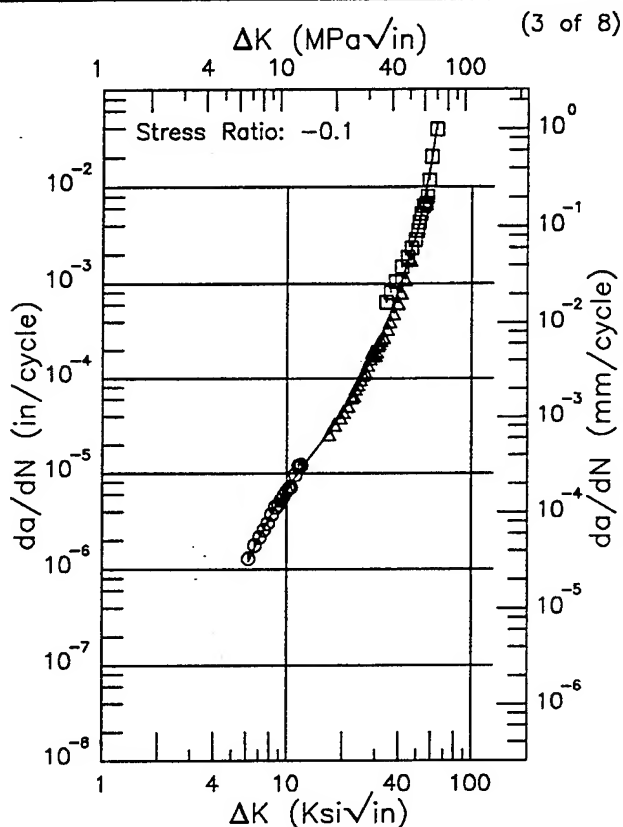


Figure 7.11.3.1.16

Condition/Ht: T851
 Form: 0.25 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 6 Hz
 Environment: LAB AIR; RT

Yield Strength: 46 ksi
 Ult. Strength: 62 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 6 in.
 Ref: RI003



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.17 (min)	1.19
7.	2.07
8.	3.41
9.	5.02
10.	6.87
13.	13.8
16.	23.4
20.	43.9
25.	94.0
30.	203.
35.	428.
40.	870.
50.	3261.
60.	17641.
63.72 (max)	40149.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.25 (min)	0.812
7.	1.25
8.	2.03
9.	3.03
10.	4.29
13.	9.89
16.	17.6
20.	33.7
23.46 (max)	61.0

RMS %
 Error
 17.54

Life Prediction Ratio Summary
 $\Delta \circ \square$
 0. .5 .8 1.25 2.

RMS %
 Error
 3.97

Life Prediction Ratio Summary
 \square
 0. .5 .8 1.25 2.

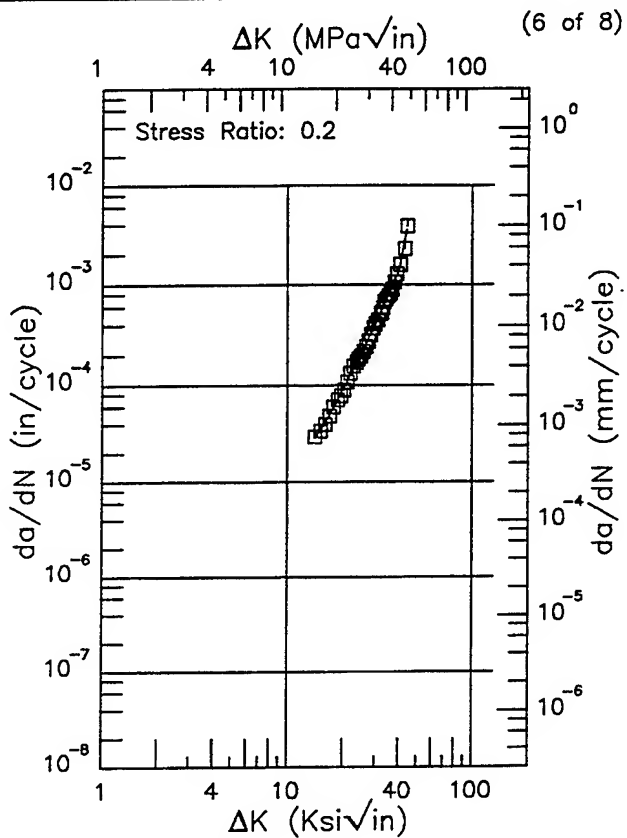
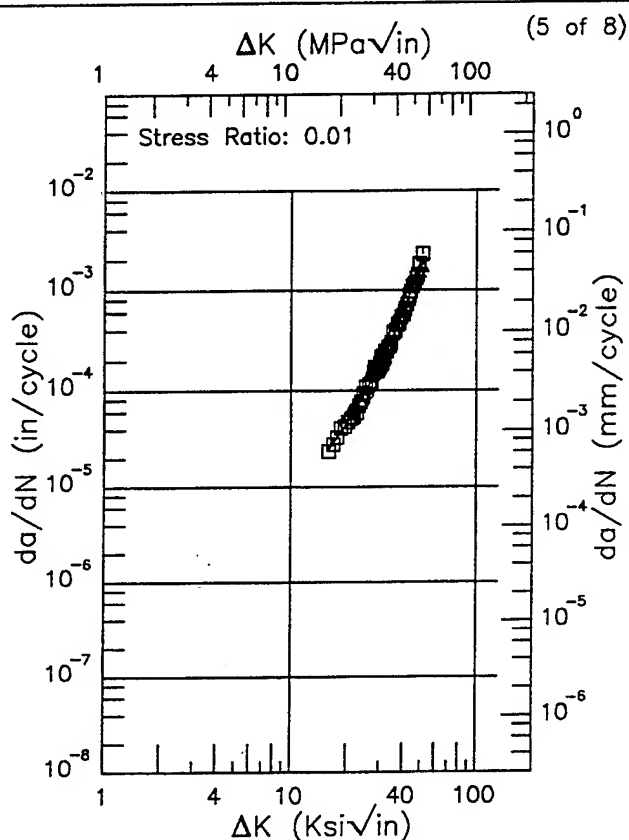
Figure 7.11.3.1.16 (Continued)

R

2219

Condition/Ht: T851
 Form: 0.25 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 6 Hz
 Environment: LAB AIR; RT

Yield Strength: 46 ksi
 Ult. Strength: 62 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 6 in.
 Ref: RI003



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
15.91 (min)	24.3
16.	24.7
20.	46.2
25.	95.0
30.	185.
35.	344.
40.	614.
50.	1788.
50.85 (max)	1949.

ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
14.07 (min)	29.0
16.	40.3
20.	91.2
25.	201.
30.	394.
35.	769.
40.	1377.
44.27 (max)	3593.

RMS %
 Error
 8.67

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error
 4.47

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.11.3.1.16 (Continued)

Condition/Ht: T851
 Form: 0.25 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 6 Hz
 Environment: LAB AIR; RT

Yield Strength: 46 ksi
 Ult. Strength: 62 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 6 in.
 Ref: RI003

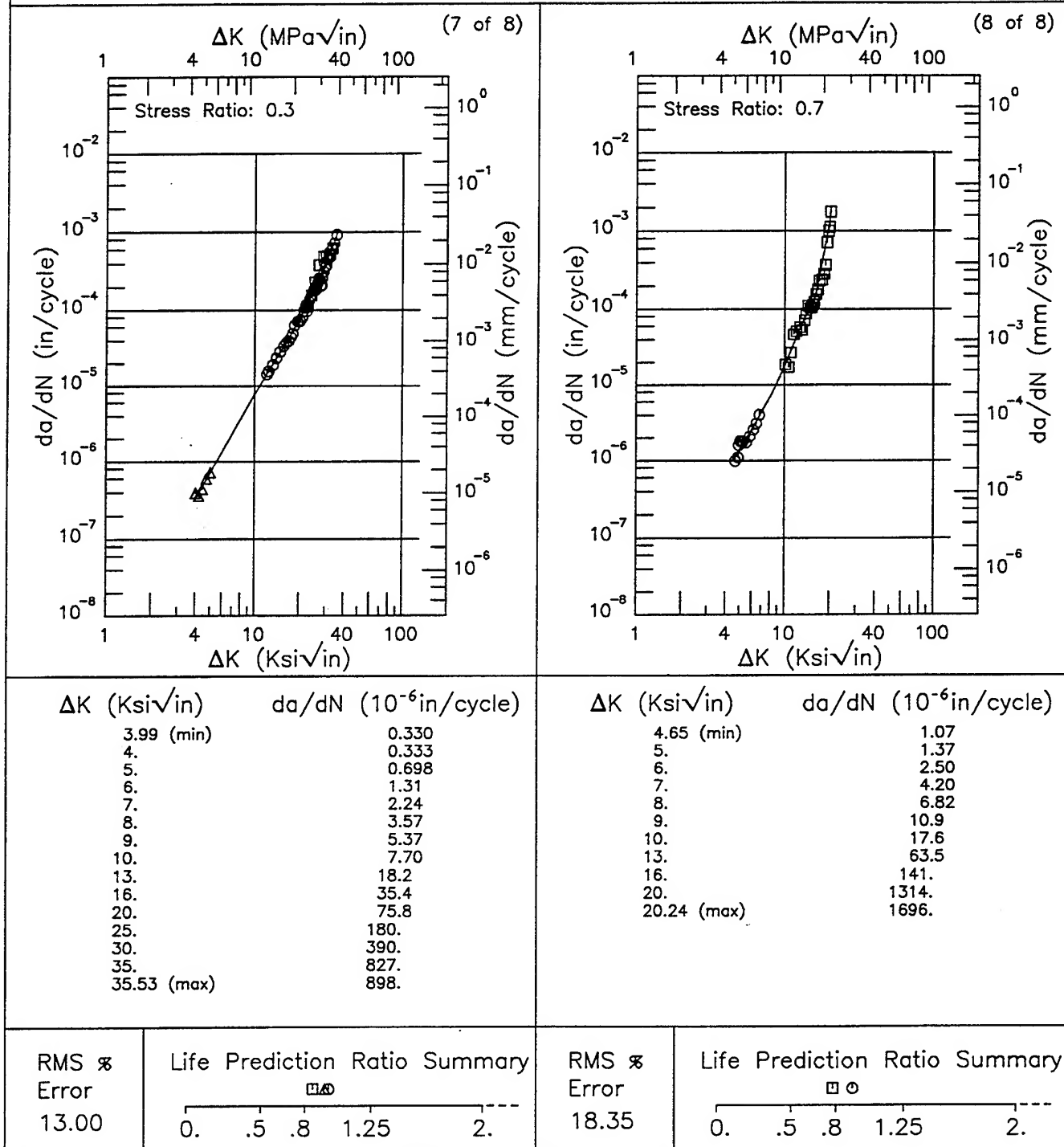


Figure 7.11.3.1.16 (Concluded)

R

2219

Condition/Ht: T851
 Form: 0.63 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 - 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 54.7 ksi
 Ult. Strength: 66.9 ksi
 Specimen Thk: 0.25 - 0.251 in.
 Specimen Width: 6.005 - 6.07 in.
 Ref: 88468

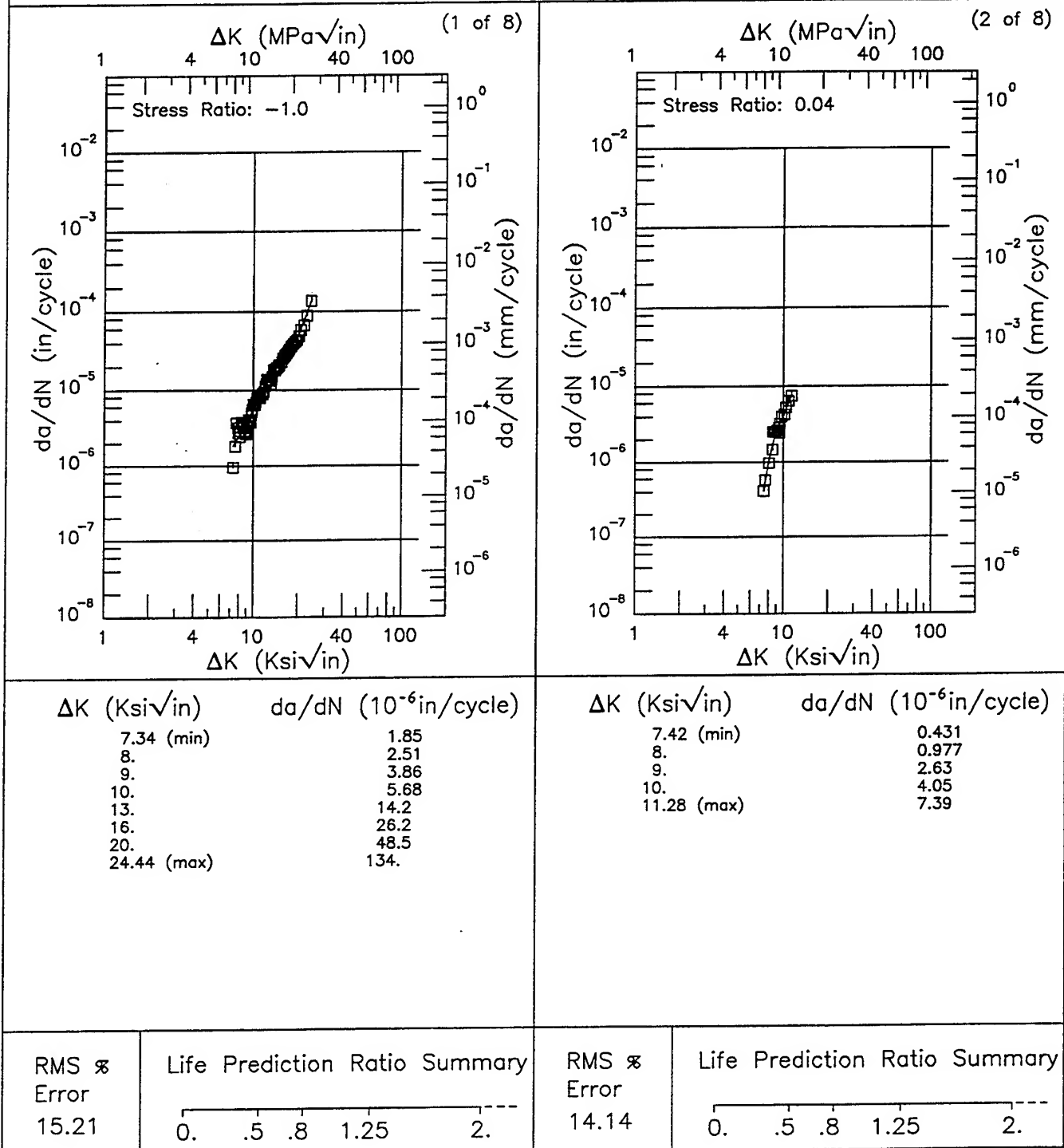


Figure 7.11.3.1.17

Condition/Ht: T851
 Form: 0.63 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 - 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 54.7 ksi
 Ult. Strength: 66.9 ksi
 Specimen Thk: 0.25 - 0.251 in.
 Specimen Width: 6.005 - 6.07 in.
 Ref: 88468

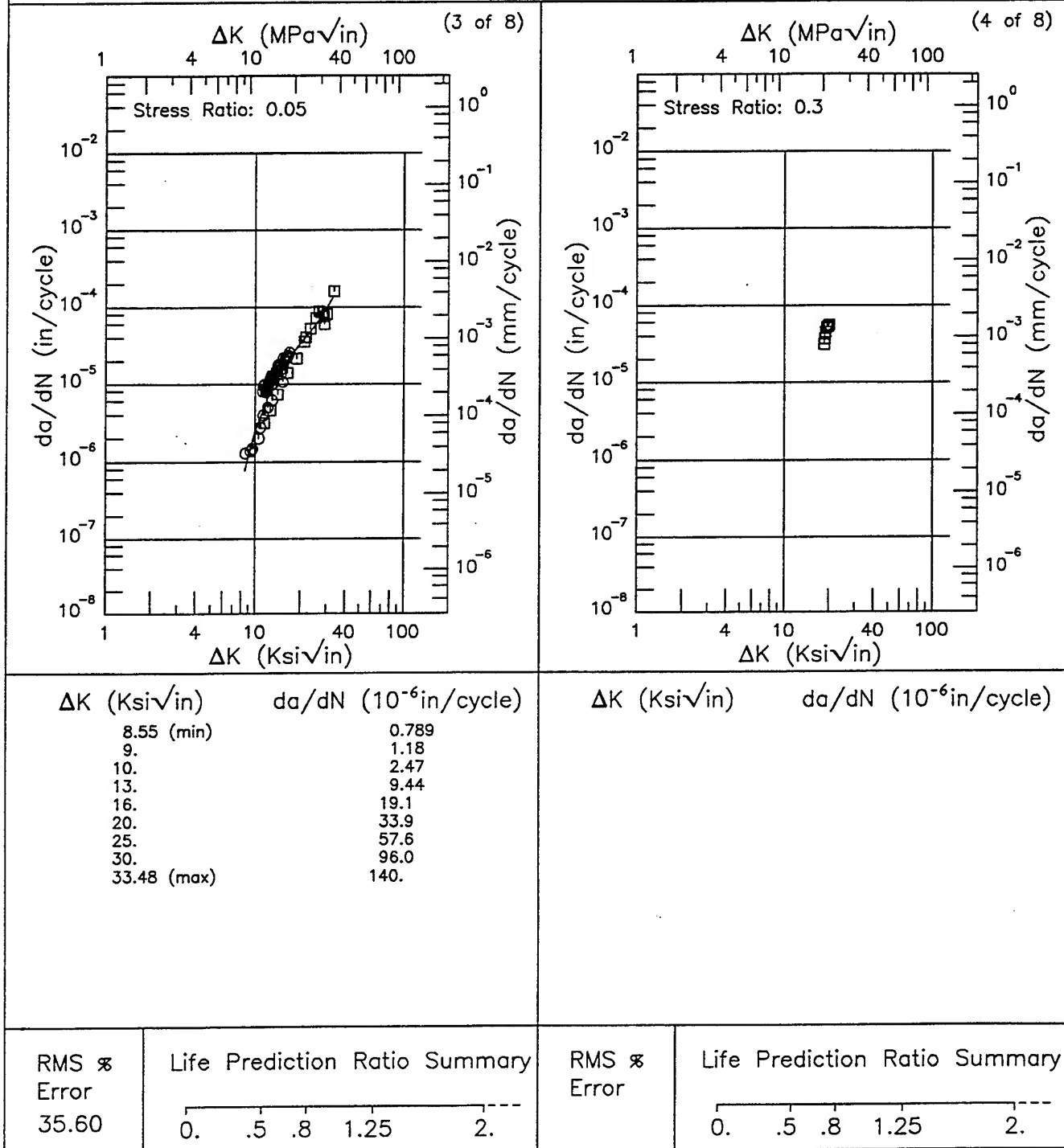


Figure 7.11.3.1.17 (Continued)

R

2219

Condition/Ht: T851
 Form: 0.63 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 - 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 54.7 ksi
 Ult. Strength: 66.9 ksi
 Specimen Thk: 0.25 - 0.251 in.
 Specimen Width: 6.005 - 6.07 in.
 Ref: 88468

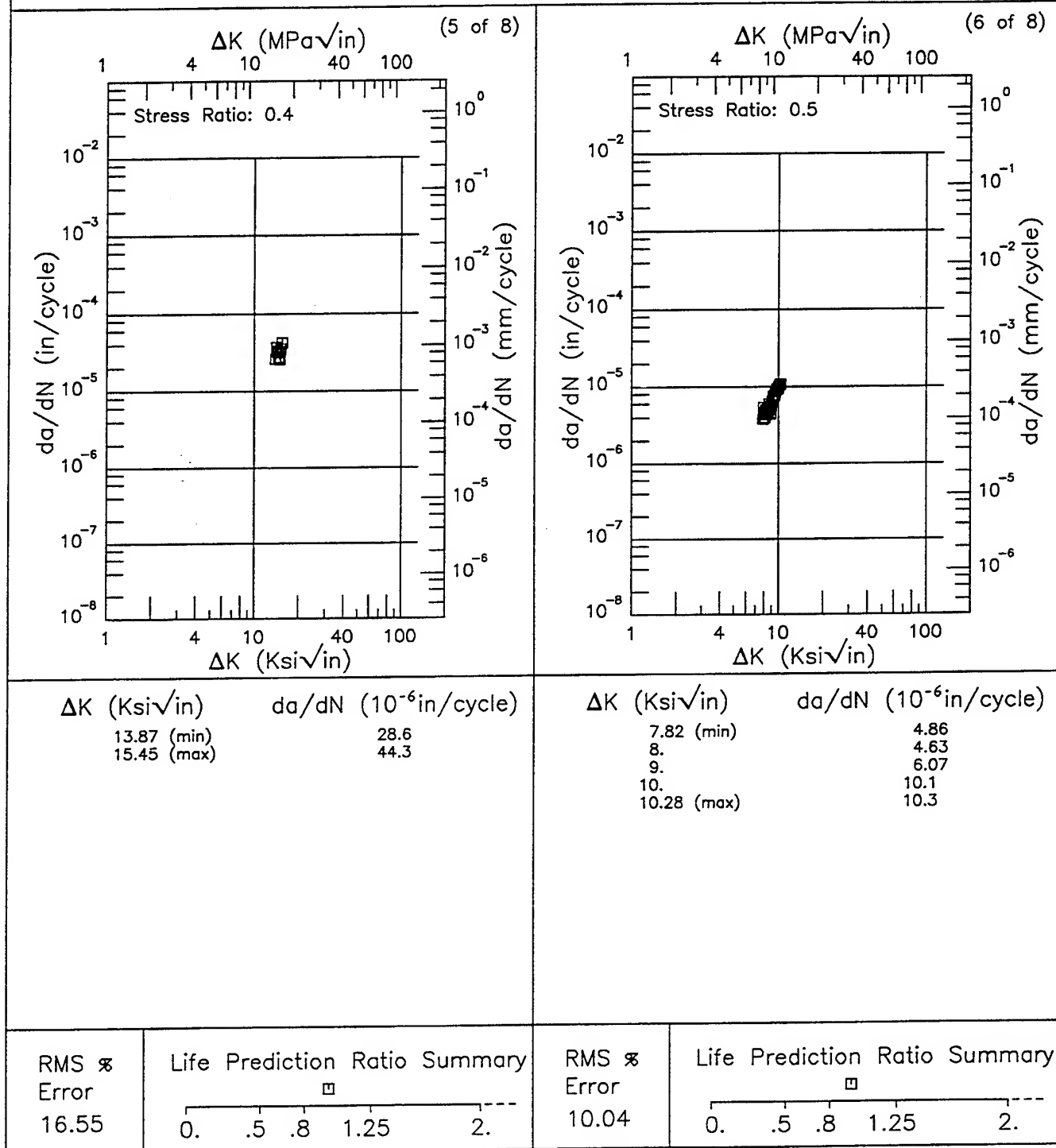


Figure 7.11.3.1.17 (Continued)

Condition/Ht: T851
 Form: 0.63 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 1 - 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 54.7 ksi
 Ult. Strength: 66.9 ksi
 Specimen Thk: 0.25 - 0.251 in.
 Specimen Width: 6.005 - 6.07 in.
 Ref: 88468

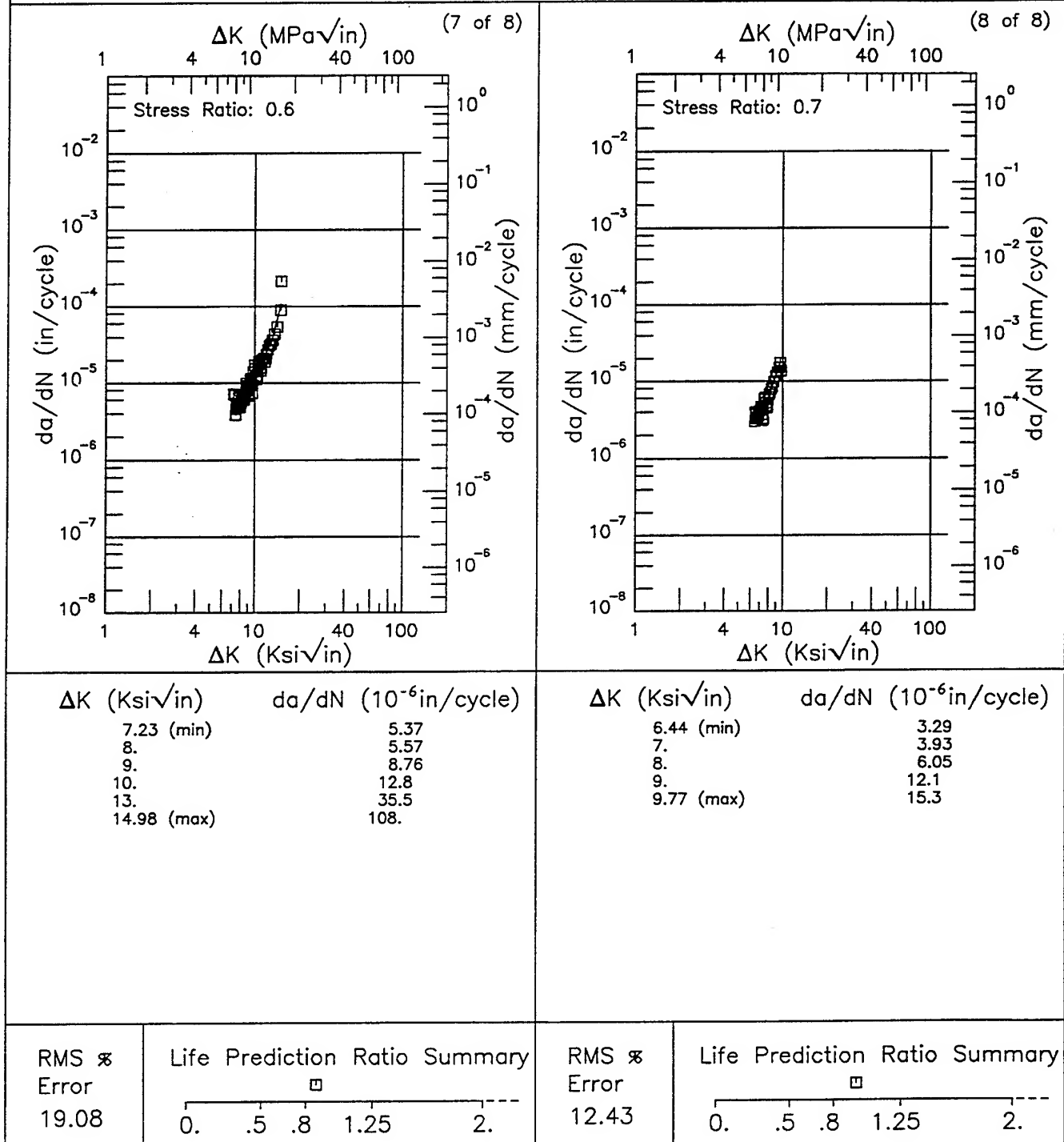


Figure 7.11.3.1.17 (Concluded)

R

2219

Condition/Ht: T851
 Form: 1.38 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 5.2 Hz
 Environment: LAB AIR; RT

Yield Strength: 50.6 ksi
 Ult. Strength: 66.4 ksi
 Specimen Thk: 0.748 - 0.752 in.
 Specimen Width: 2.997 - 3.003 in.
 Ref: 86213

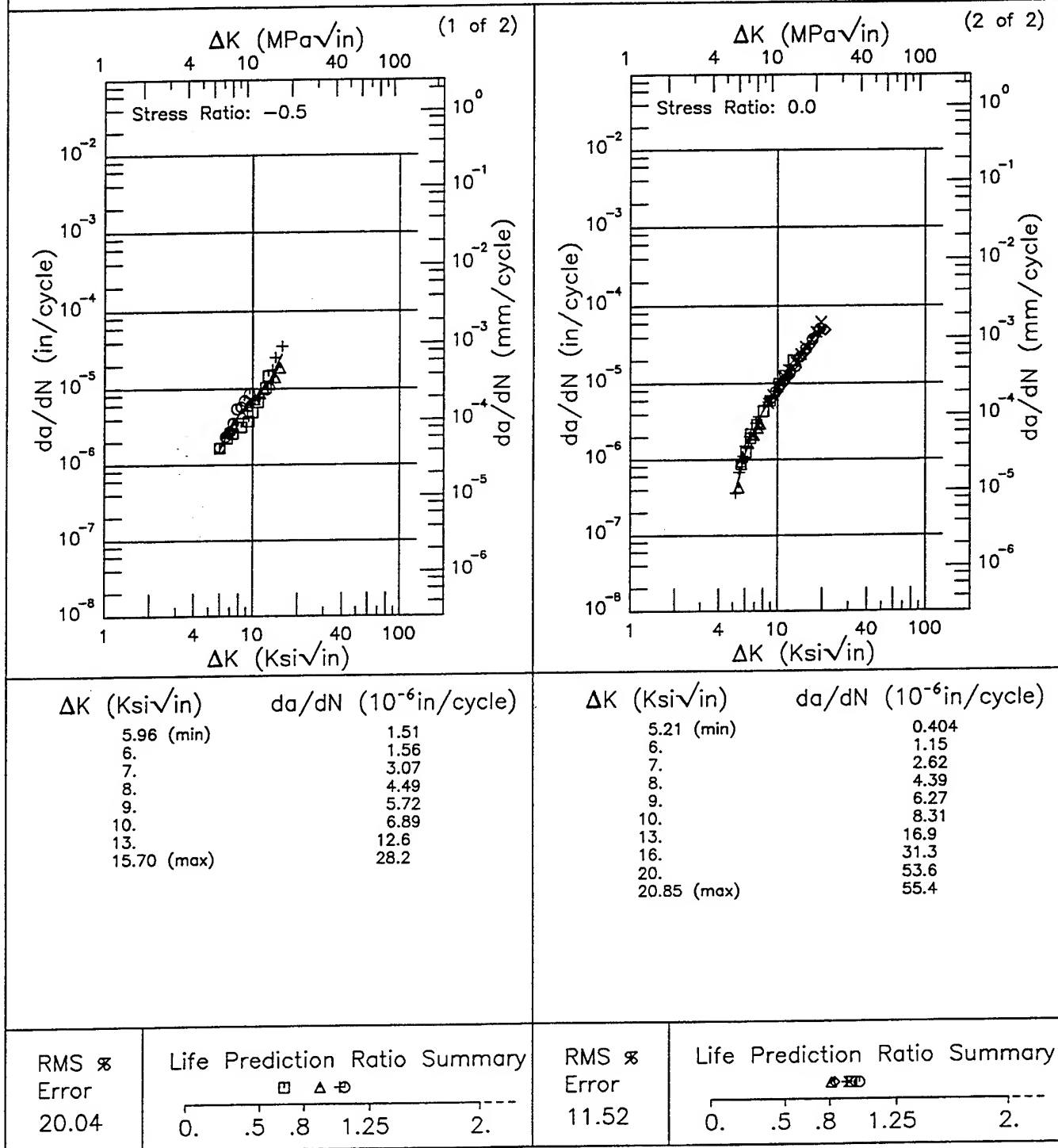


Figure 7.11.3.1.18

Condition/Ht: T851
 Form: 0.25 in. Plate
 Specimen Type: CCP (max load specified)
 Orientation: L-T
 Frequency: 3 Hz
 Environment: LAB AIR; RT

Yield Strength: 46 ksi
 Ult. Strength: 62 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 6 in.
 Ref: RI003

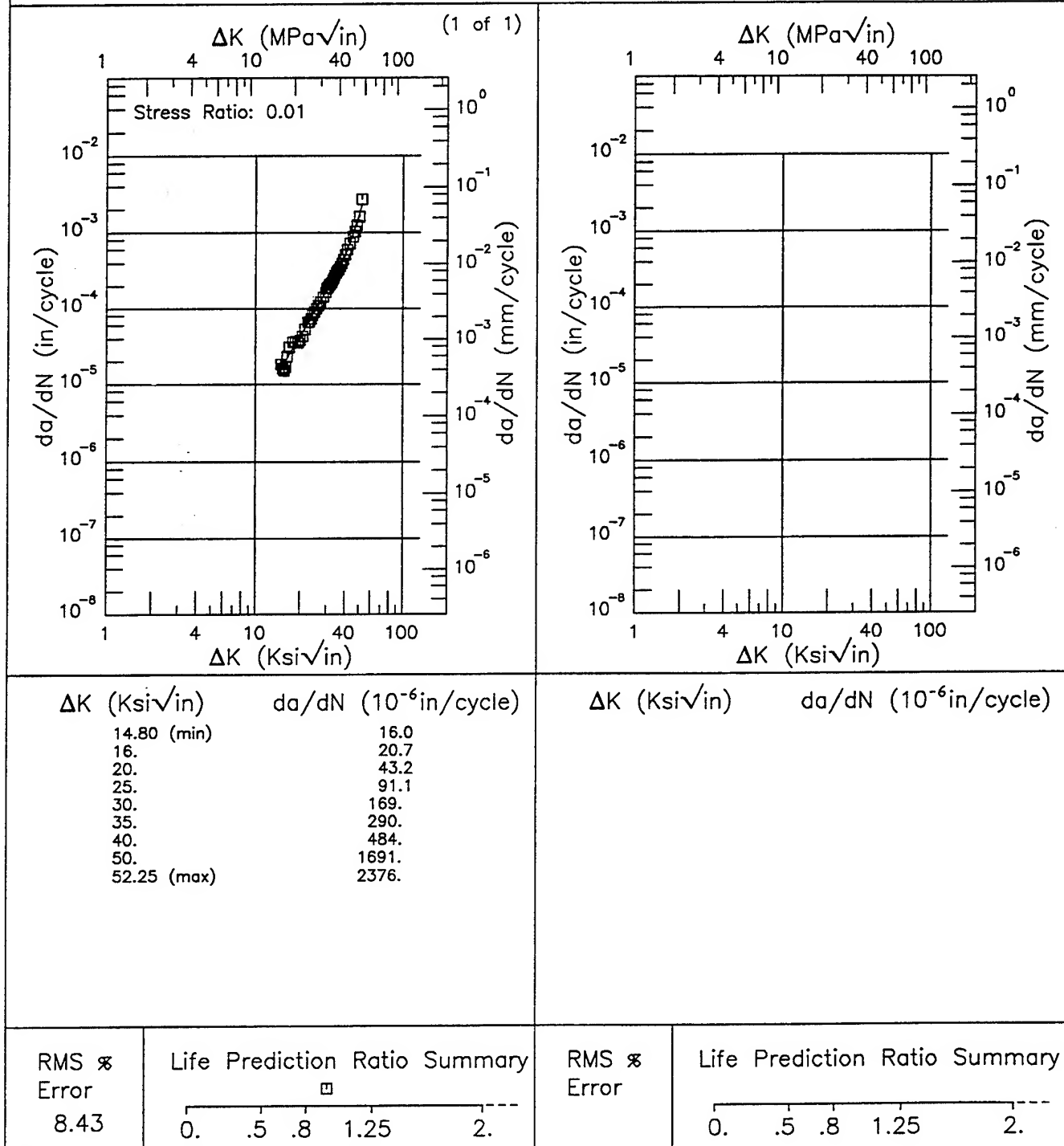


Figure 7.11.3.1.19

R 2219

Condition/Ht: T851
 Form:
 Specimen Type: CT
 Orientation:
 Frequency: 5 Hz
 Environment: LAB AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.25 in.
 Specimen Width: 2 in.
 Ref: UD010

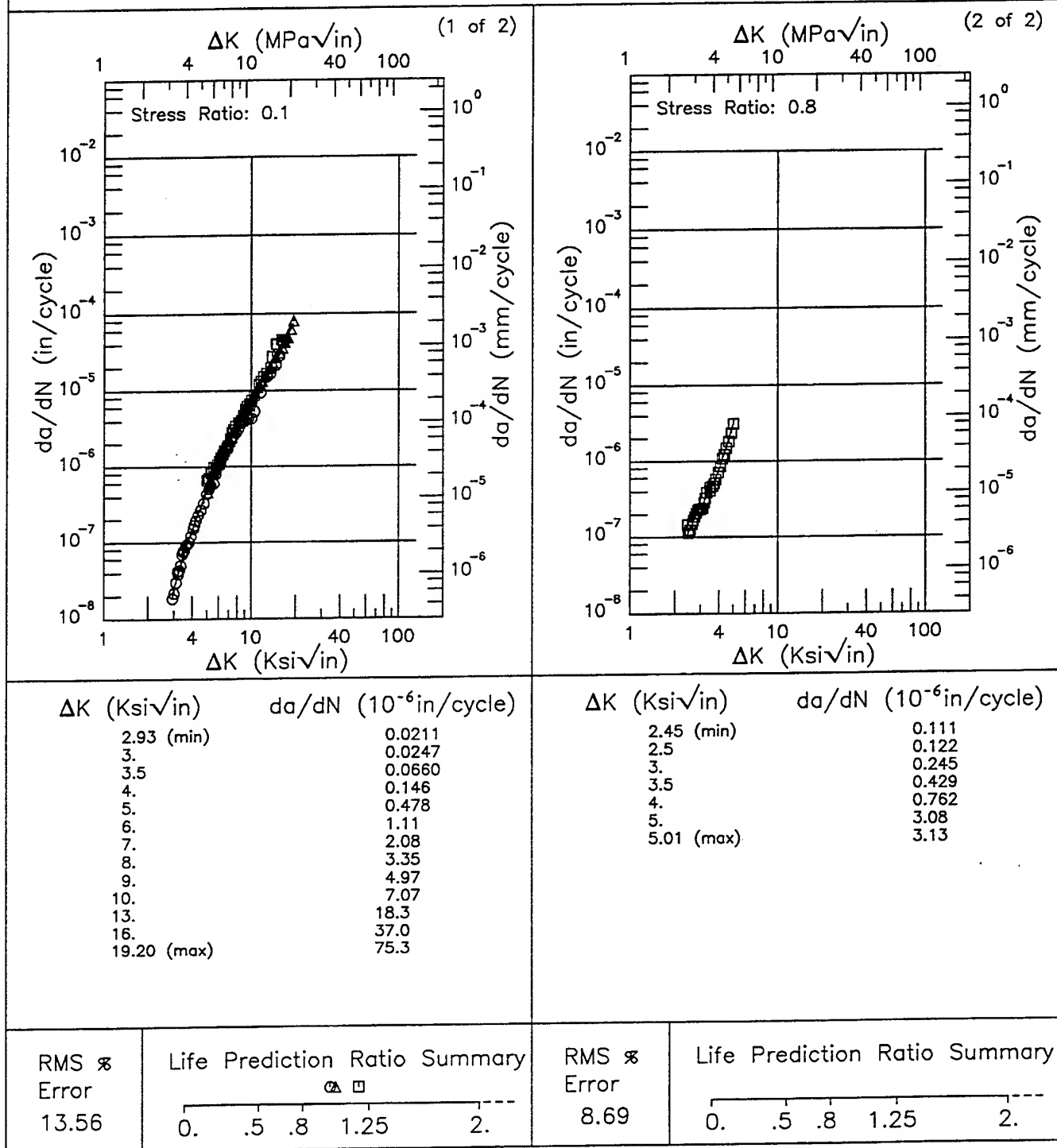


Figure 7.11.3.1.20

Condition/Ht: T851
 Form:
 Specimen Type: CT
 Orientation:
 Frequency: 30 Hz
 Environment: LAB AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.25 in.
 Specimen Width: 2 in.
 Ref: UD010

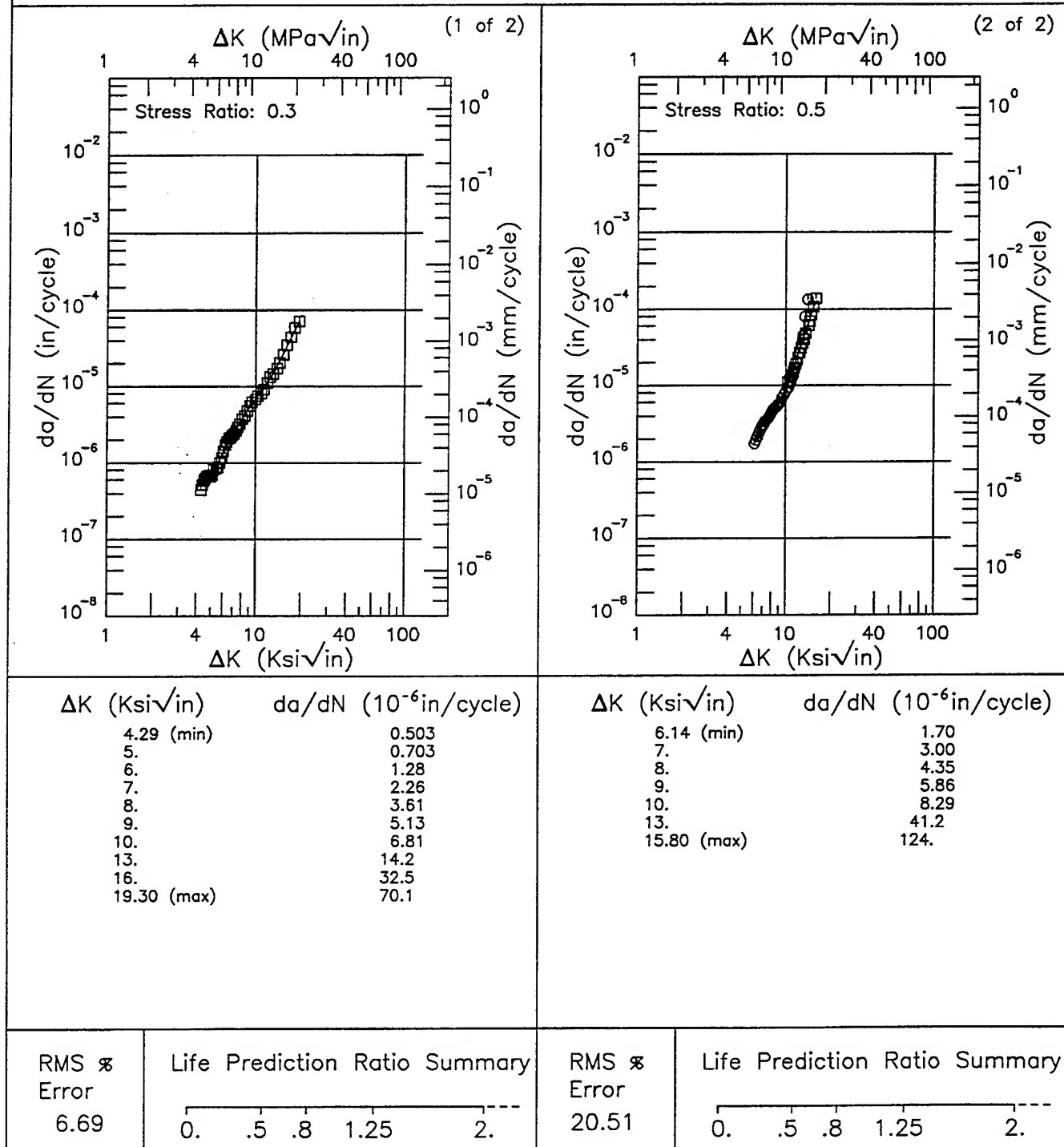
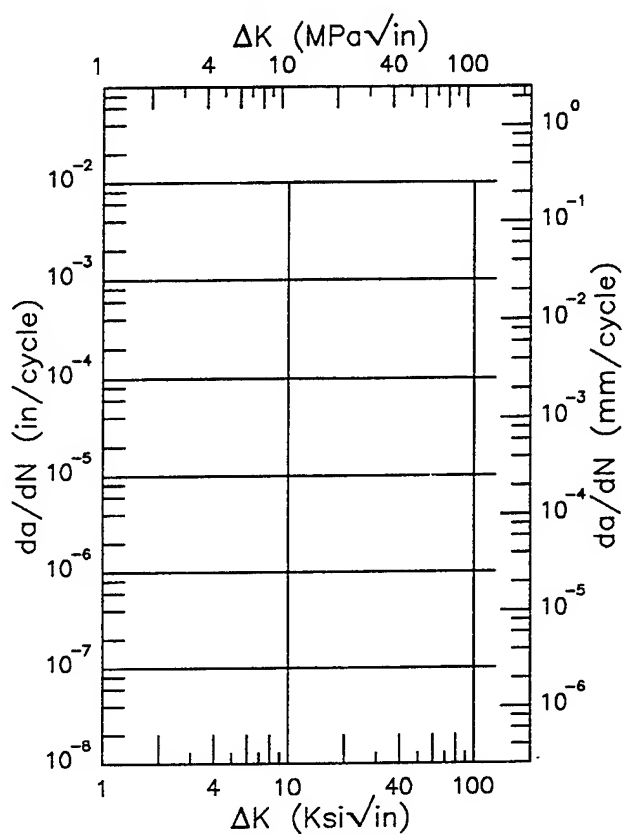
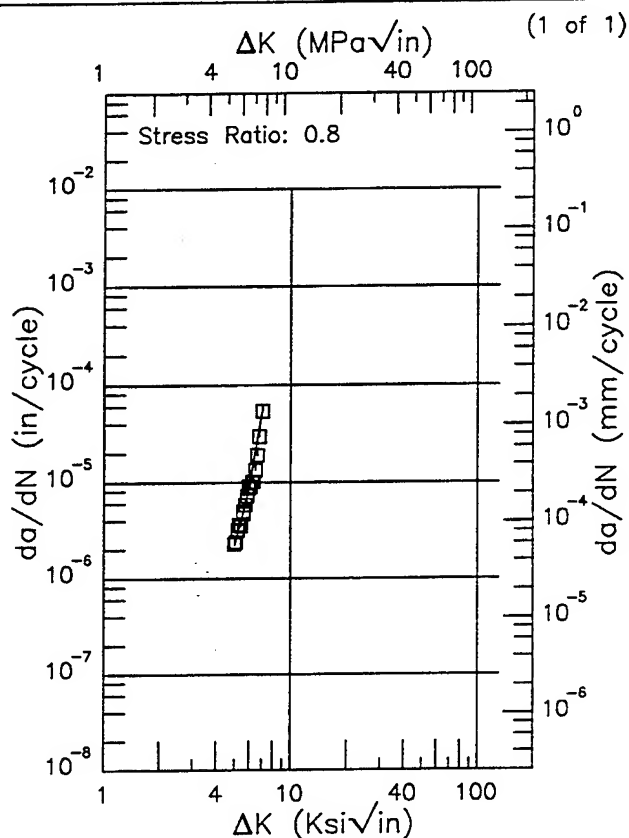


Figure 7.11.3.1.21

R 2219

Condition/Ht: T851
 Form:
 Specimen Type: CT
 Orientation:
 Frequency: 0.1 Hz
 Environment: LAB AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.25 in.
 Specimen Width: 2 in.
 Ref: UD010



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.00 (min)	2.17
6.	8.99
7.	52.7
7.01 (max)	53.7

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
--------------------------------------	-------------------------------

RMS %
 Error
 15.39

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.11.3.1.22

Condition/Ht: T851
 Form:
 Specimen Type: CCP (max load specified)
 Orientation:
 Frequency: 5 Hz
 Environment: LAB AIR; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.25 in.
 Specimen Width: 3 in.
 Ref: UD010

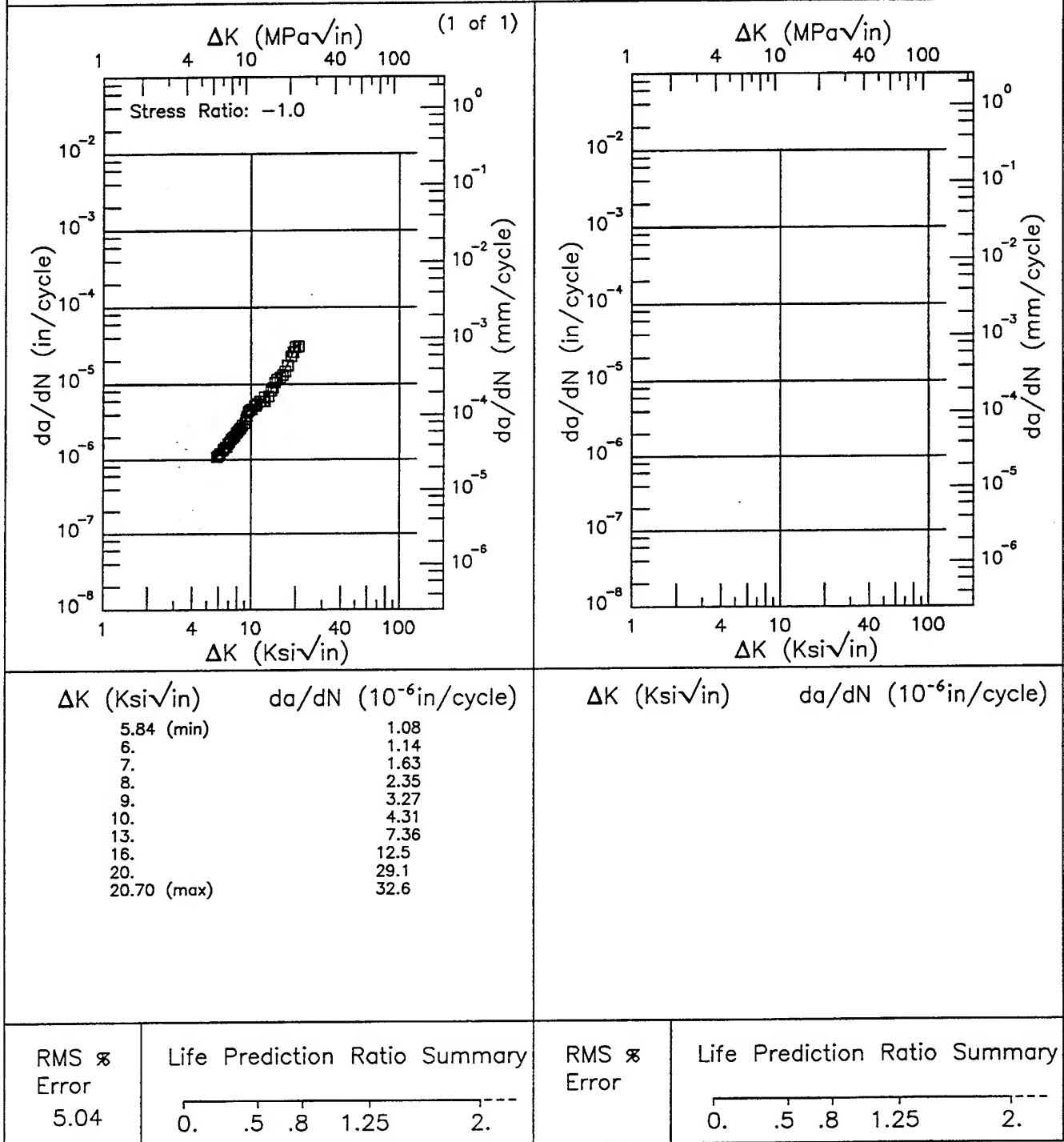


Figure 7.11.3.1.23

R 2219

Condition/Ht: T8511
 Form: 1.75 in. Extruded Bar
 Specimen Type: CT
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength: 51 ksi
 Ult. Strength: 66 ksi
 Specimen Thk: 0.992 - 0.993 in.
 Specimen Width: 6 in.
 Ref: 85837

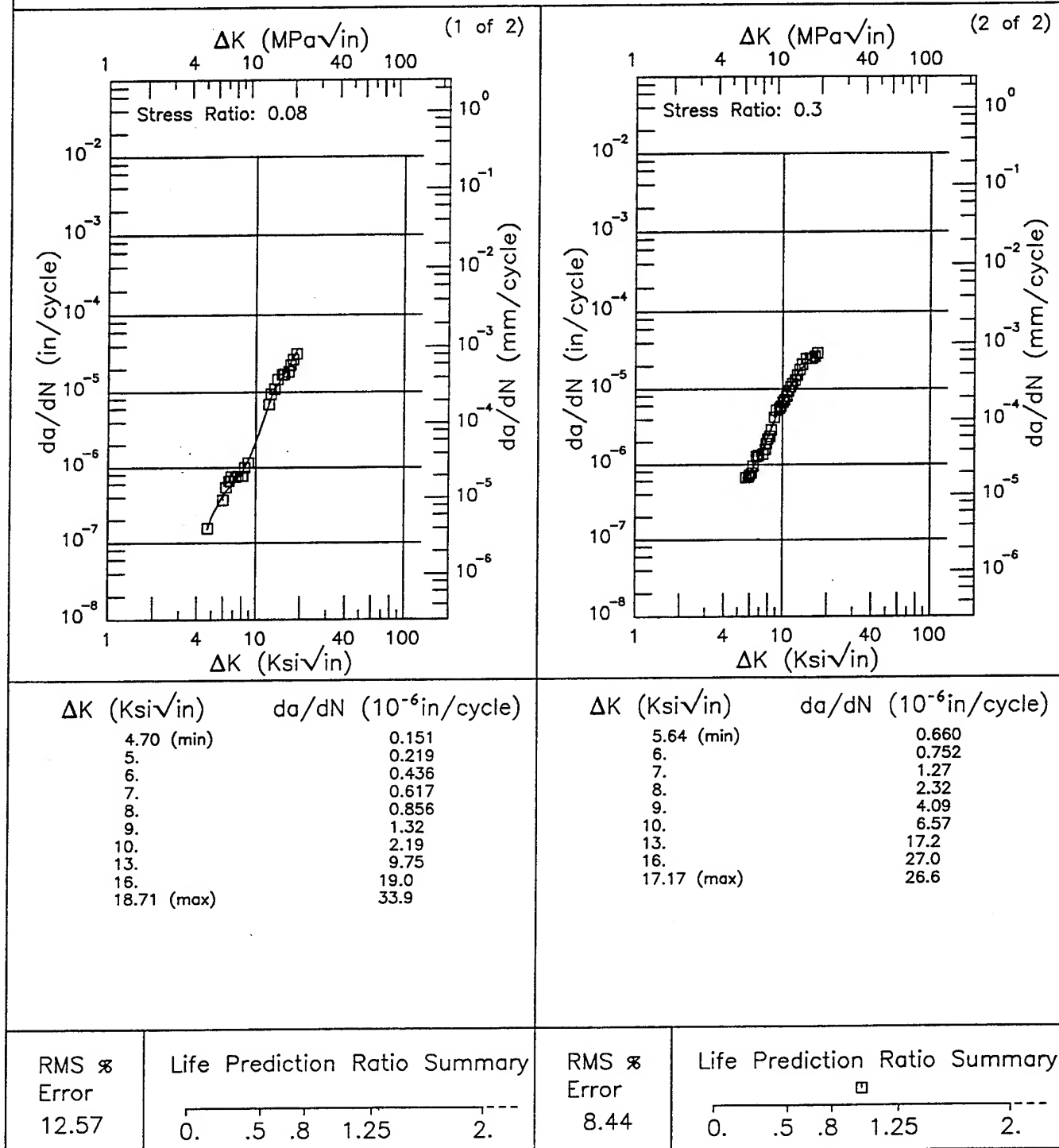


Figure 7.11.3.1.24

Condition/Ht: T8511
 Form: 1.75 in. Extruded Bar
 Specimen Type: CT
 Orientation: L-T
 Frequency: 1 Hz
 Environment: S.T.W.; RT

Yield Strength: 51 ksi
 Ult. Strength: 66 ksi
 Specimen Thk: 0.992 in.
 Specimen Width: 6 in.
 Ref: 85837

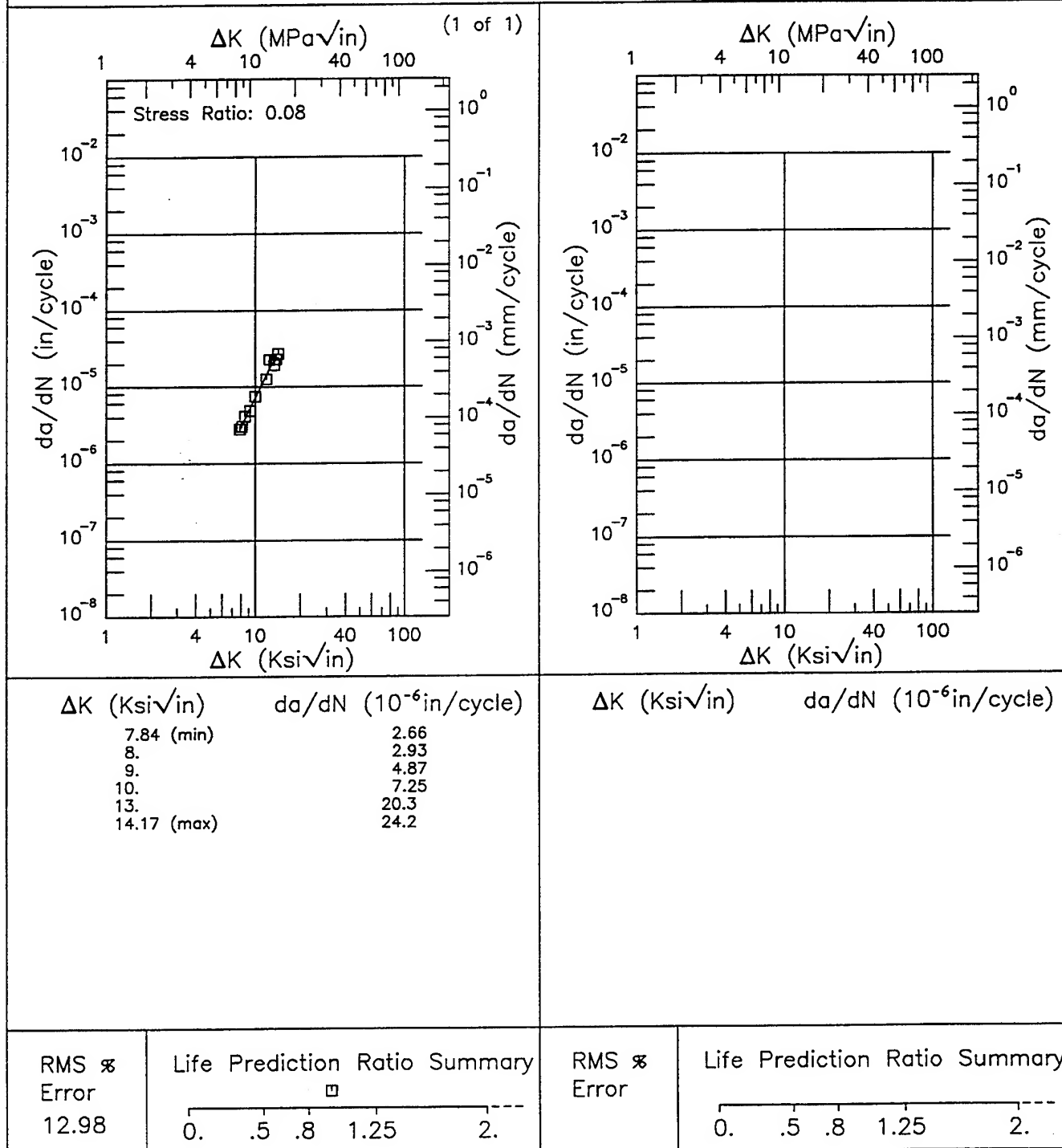


Figure 7.11.3.1.25

EF

2219

Condition/Ht: T8511

Form: 1.75 in. Extruded Bar

Specimen Type: CT

Orientation: T-L

Stress Ratio: 0.08

Yield Strength: 51 ksi

Ult. Strength: 66 ksi

Specimen Thk: 0.99 - 0.995 in.

Specimen Width: 6 in.

Ref: 85837

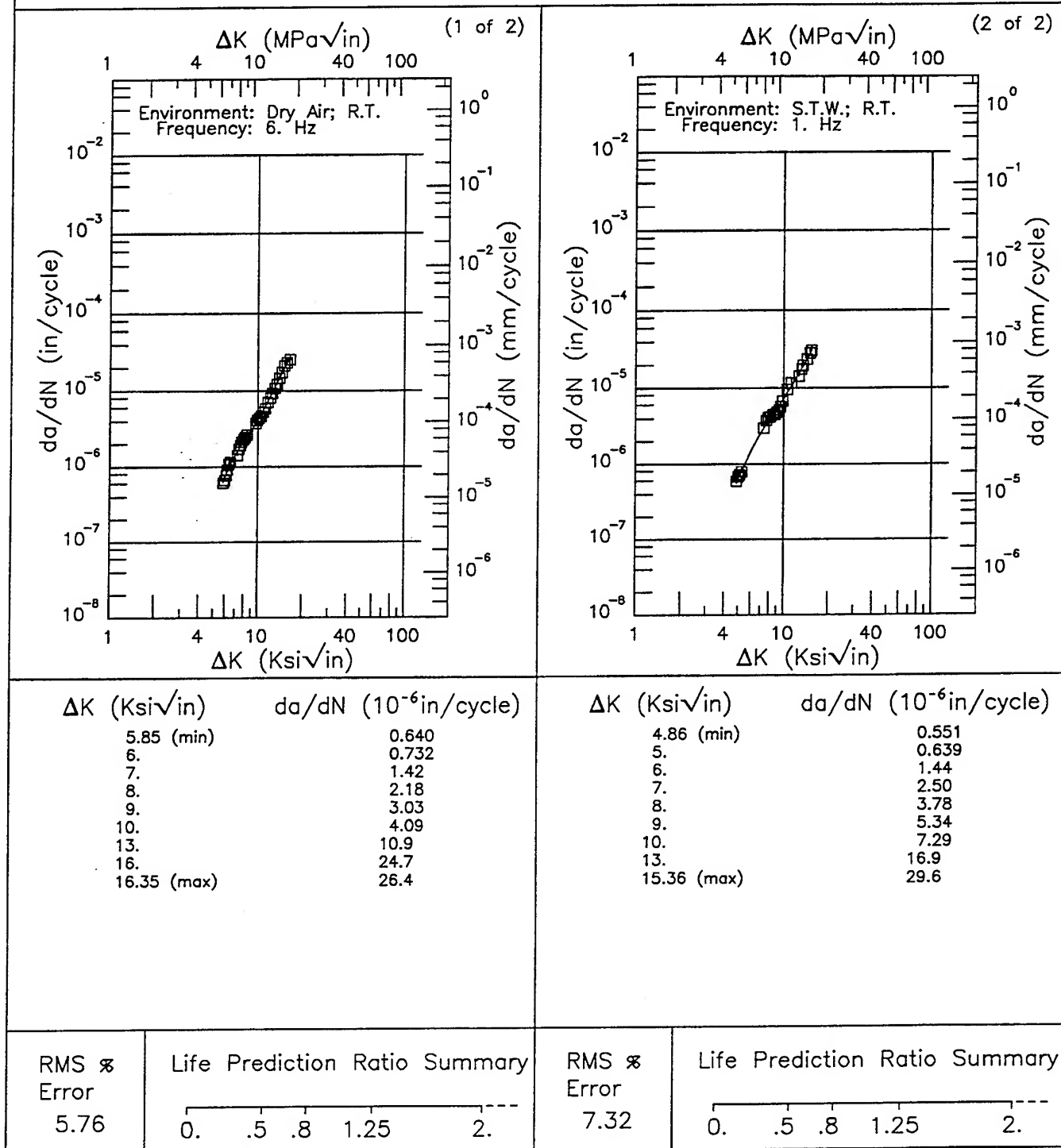


Figure 7.11.3.1.26

Condition/Ht: T852
 Form: 6 in. Billet
 Specimen Type: CT
 Orientation: L-T
 Frequency: 6 Hz
 Environment: DRY AIR; RT

Yield Strength: 50 ksi
 Ult. Strength: 65 ksi
 Specimen Thk: 0.997 in.
 Specimen Width: 6.19 in.
 Ref: 85837

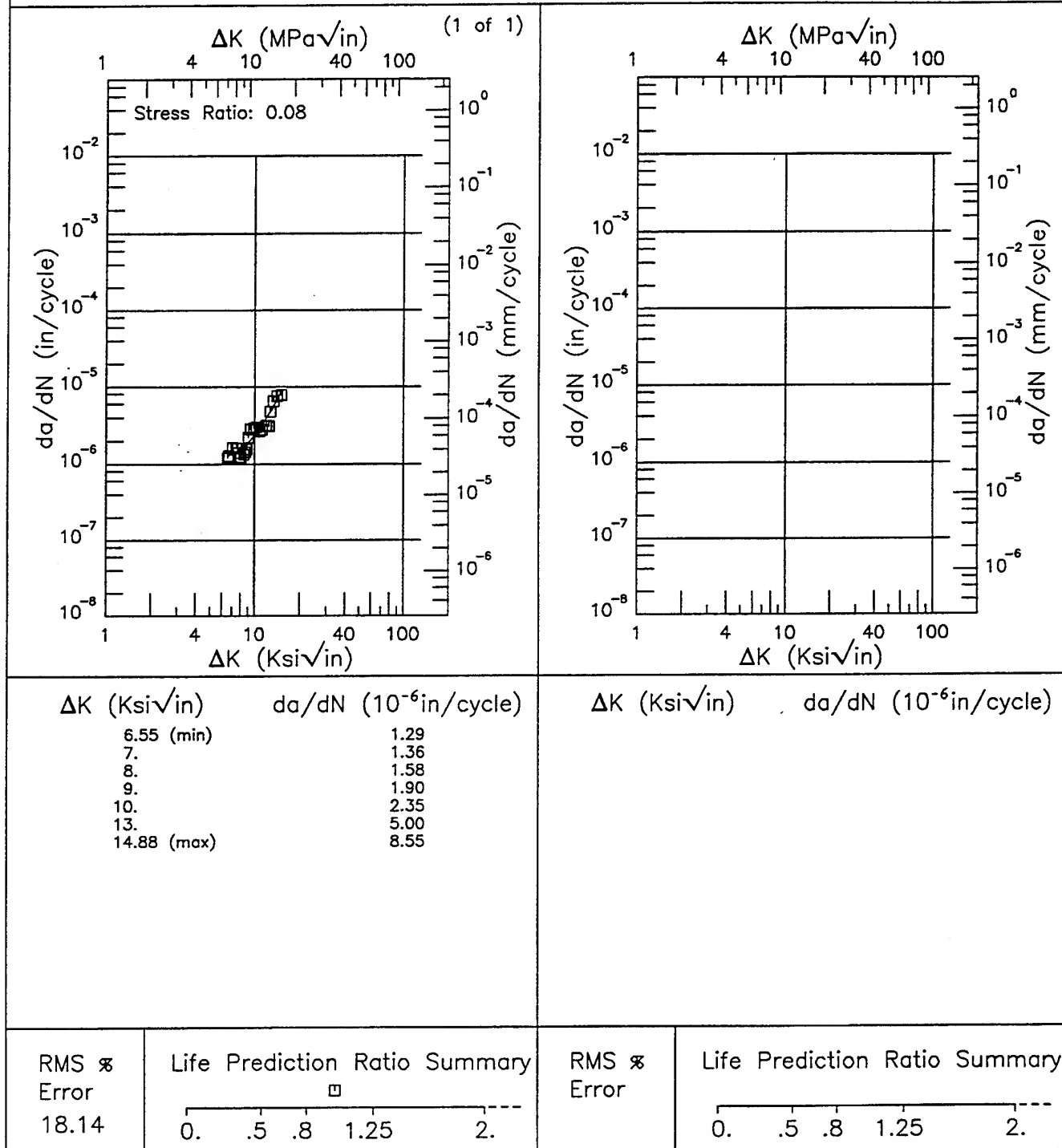
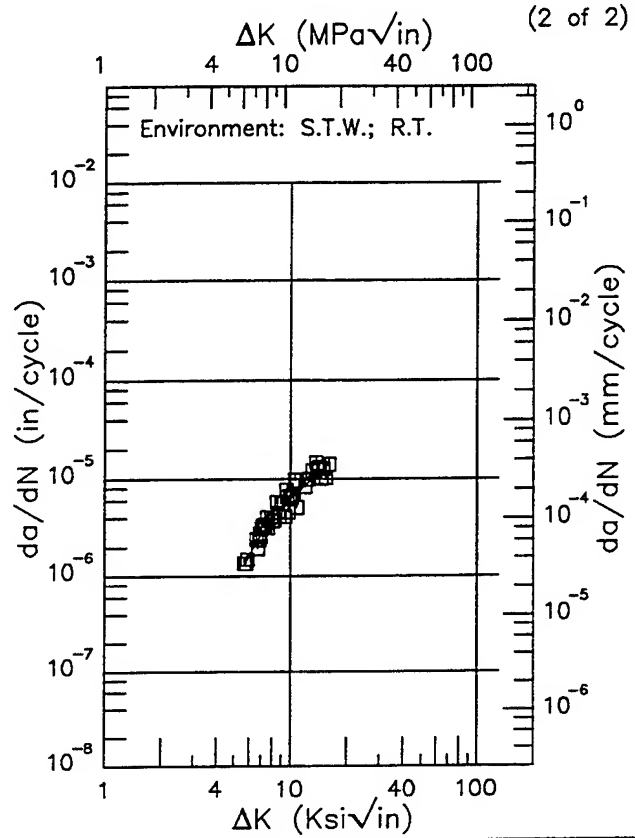
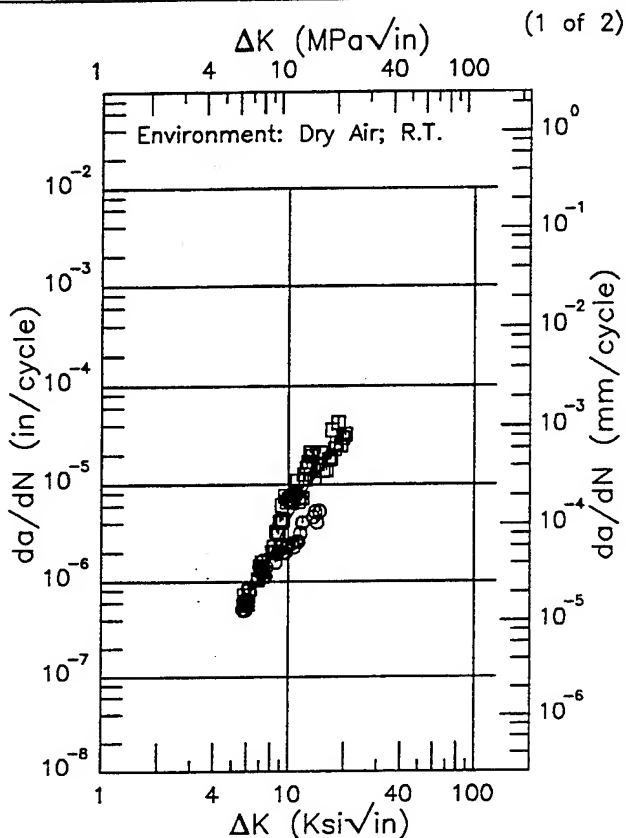


Figure 7.11.3.1.27

E 2219 |
 Condition/Ht: T852
 Form: 2 - 5.5 in. Forging
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.33
 Frequency: 2 - 20 Hz

Yield Strength: 49.2 - 50.7 ksi
 Ult. Strength: 62.5 - 65 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.805 in.
 Ref: AL001



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.69 (min)	0.552
6.	0.654
7.	1.12
8.	1.85
9.	2.90
10.	4.28
13.	9.95
16.	16.9
20.	37.6
20.09 (max)	38.5

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.69 (min)	1.34
6.	1.64
7.	2.71
8.	3.89
9.	5.09
10.	6.28
13.	9.87
16.00 (max)	13.9

RMS \times
 Error
 40.53

Life Prediction Ratio Summary
 0. .5 .8 1.25 2. ---

RMS \times
 Error
 16.26

Life Prediction Ratio Summary
 0. .5 .8 1.25 2. ---

Figure 7.11.3.1.28

Condition/Ht: T852
 Form: 2 in. Forging
 Specimen Type: CT
 Orientation: L-T
 Frequency: 20 Hz
 Environment: S.T.W.; RT

Yield Strength: 50.7 ksi
 Ult. Strength: 65 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.1 in.
 Ref: AL001

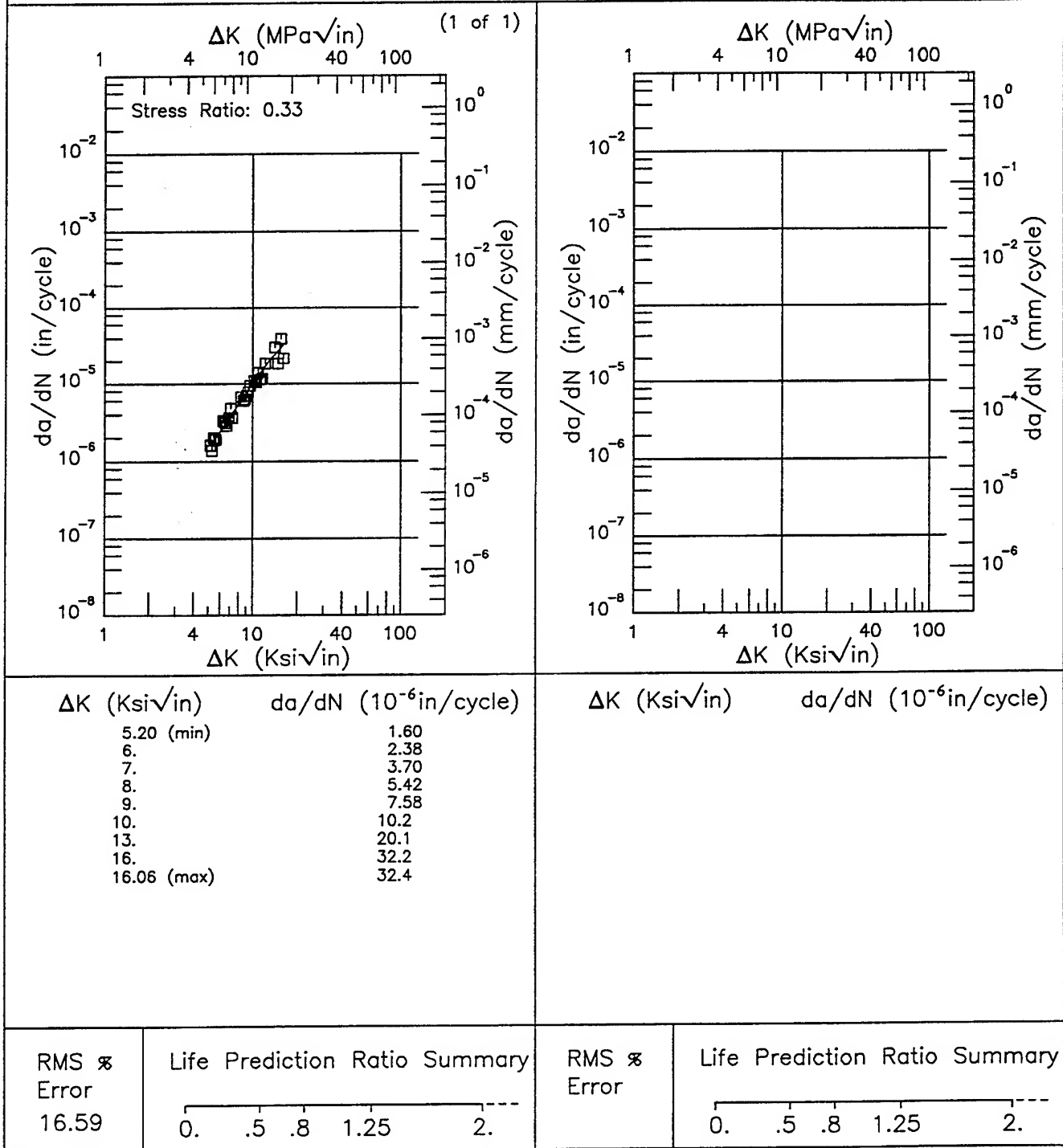


Figure 7.11.3.1.29

E

2219

Condition/Ht: T852
 Form: 2 - 5.5 in. Forging
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.33
 Frequency: 2 - 20 Hz

Yield Strength: 46.4 - 50.6 ksi
 Ult. Strength: 61.6 - 66.5 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.805 in.
 Ref: AL001

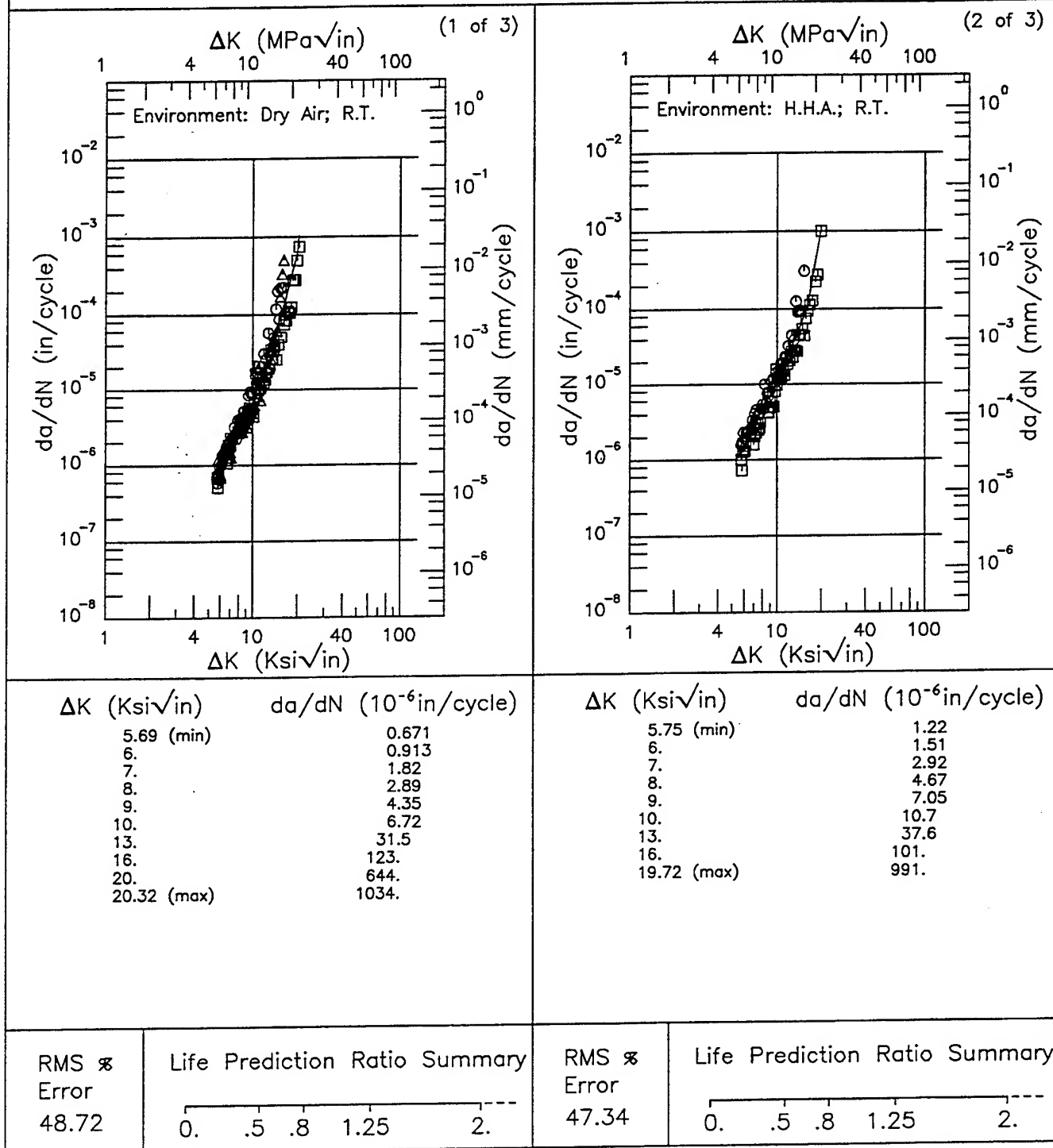


Figure 7.11.3.1.30

Condition/Ht: T852
 Form: 2 - 5.5 in. Forging
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.33
 Frequency: 2 - 20 Hz

Yield Strength: 46.4 - 50.6 ksi
 Ult. Strength: 61.6 - 66.5 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.805 in.
 Ref: AL001

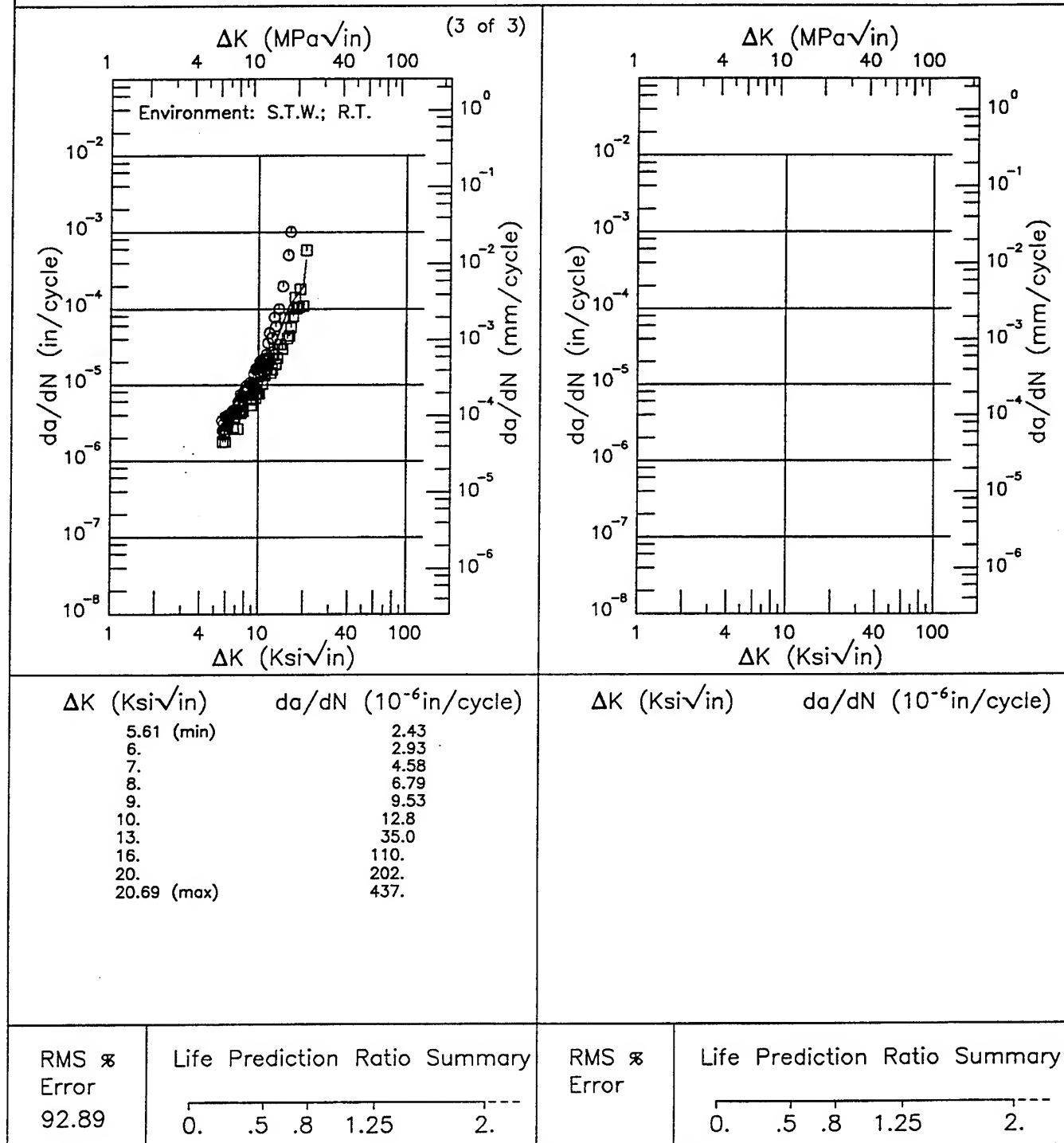


Figure 7.11.3.1.30 (Concluded)

EF

2219

Condition/Ht: T852
 Form: 5.5 in. Forging
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.33

Yield Strength: 46.4 ksi
 Ult. Strength: 61.6 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 2.55 in.
 Ref: AL001

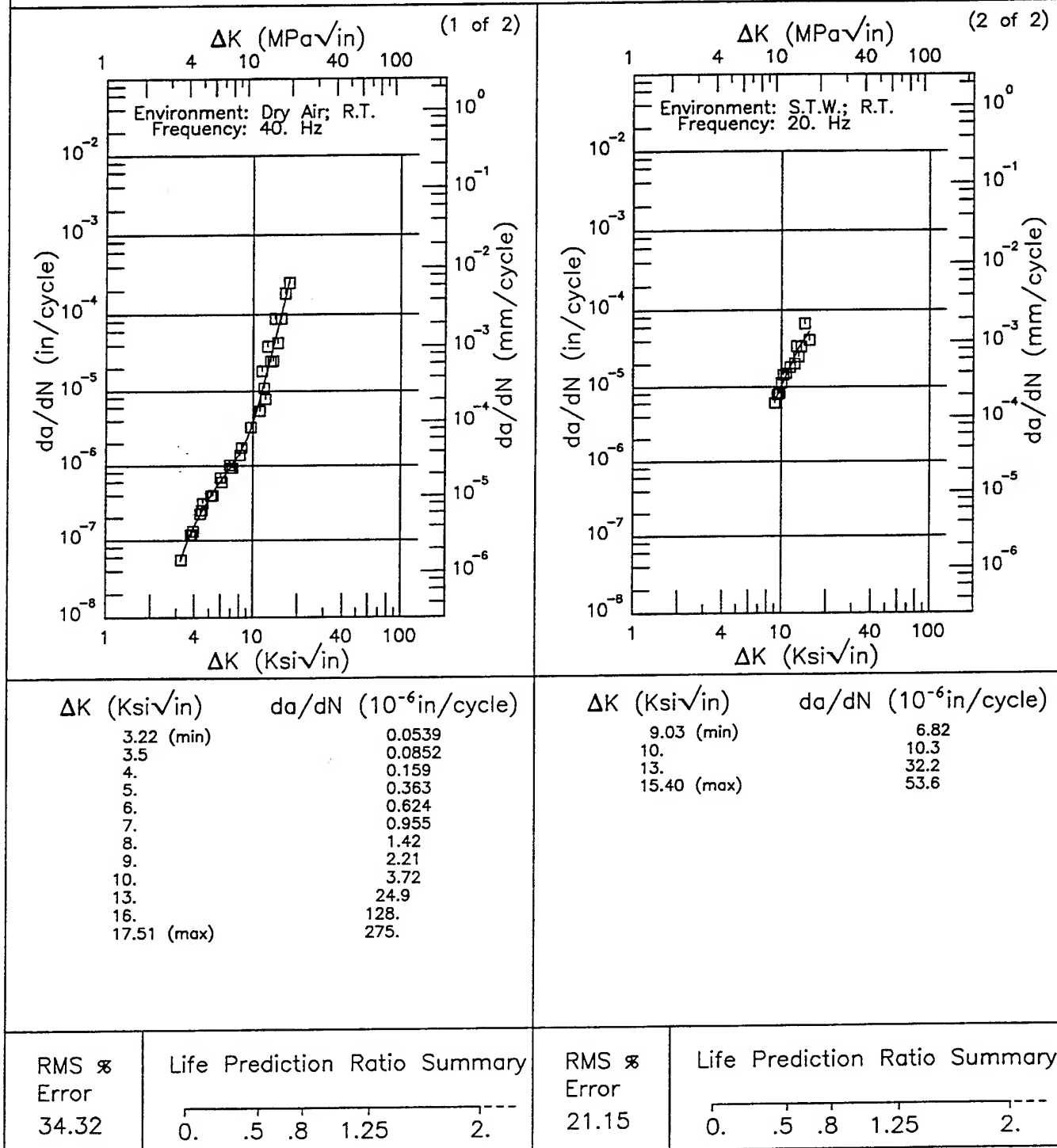


Figure 7.11.3.1.31

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E

2219

Condition/Ht: T852
 Form: 5.5 in. Forging
 Specimen Type: CT
 Orientation: S-L
 Stress Ratio: 0.33
 Frequency: 2 - 20 Hz

Yield Strength: 47.2 ksi
 Ult. Strength: 62.3 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.805 in.
 Ref: AL001

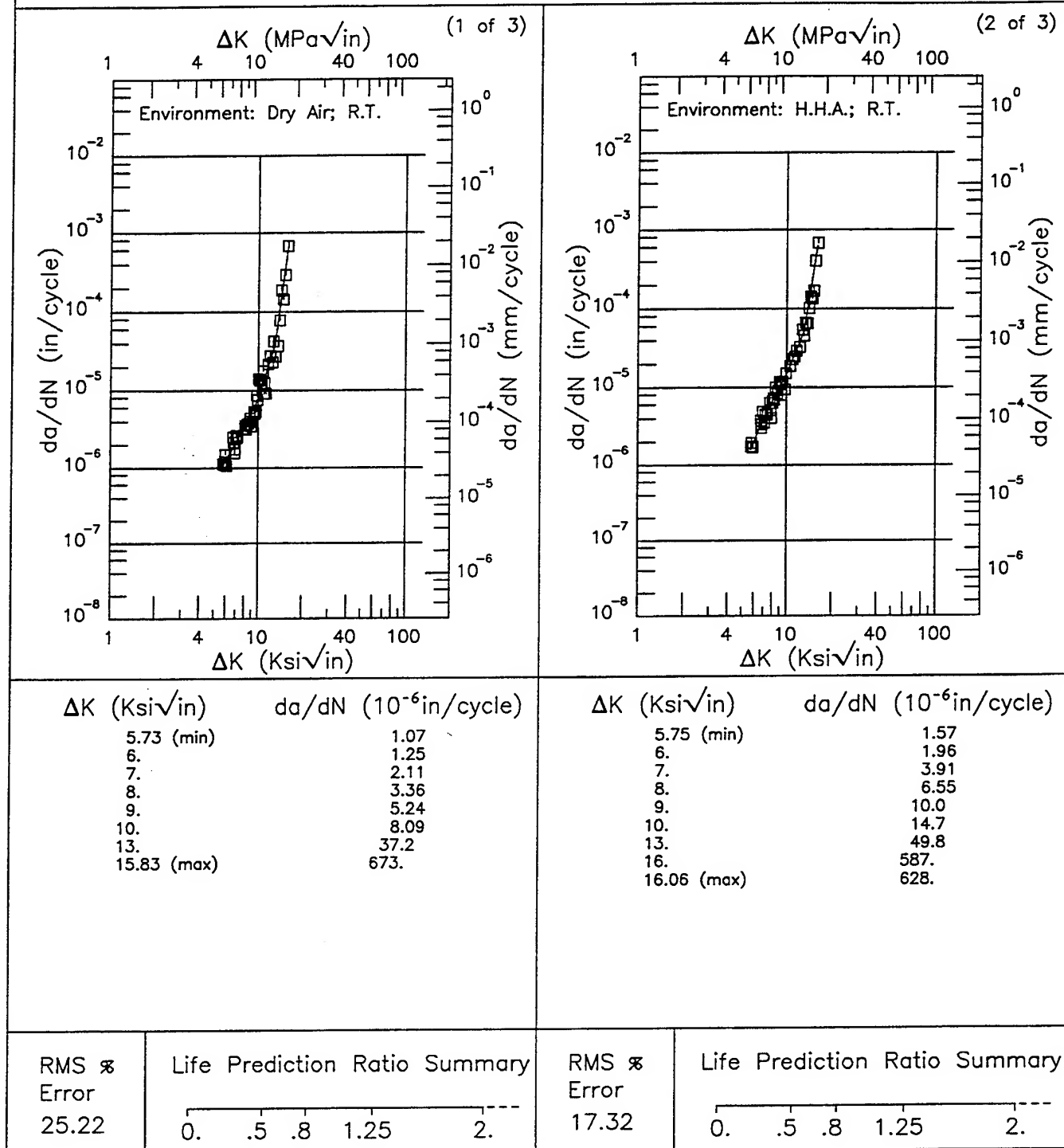
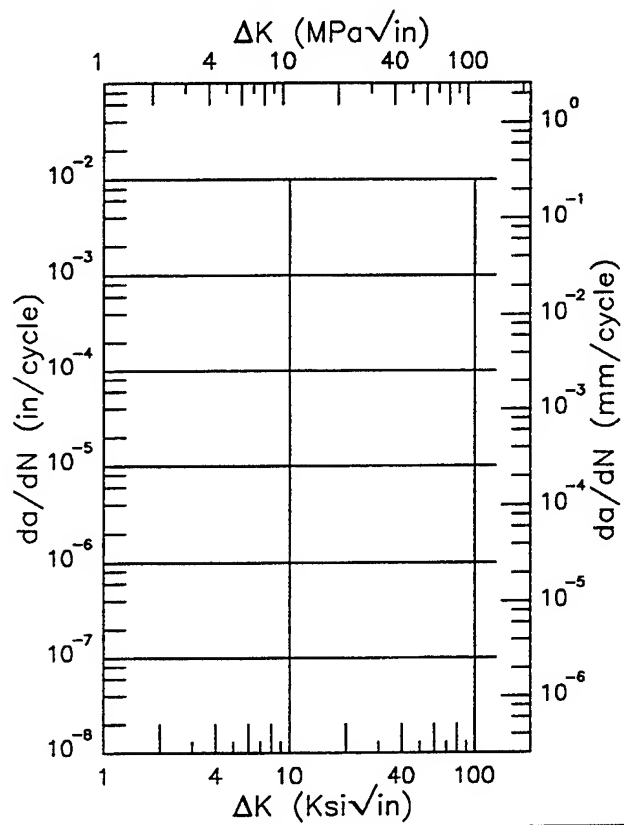
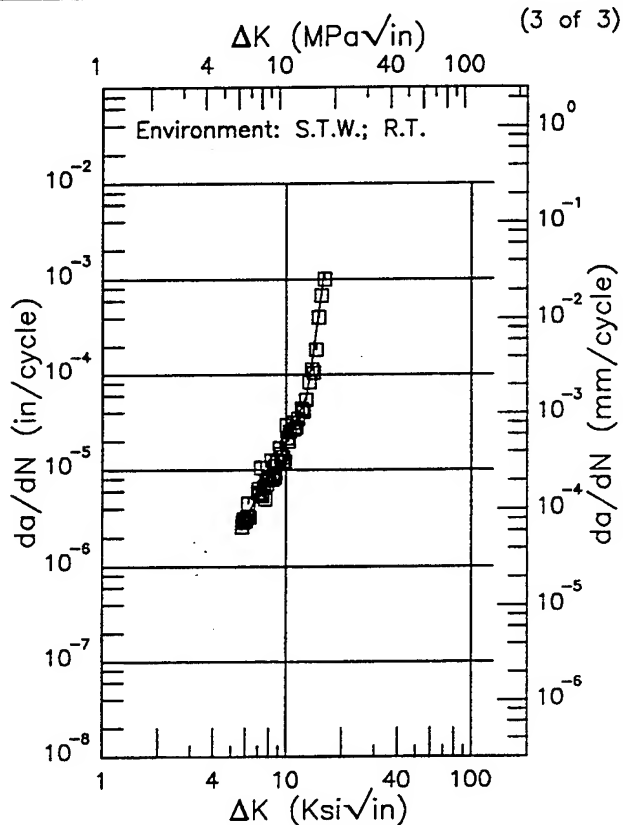


Figure 7.11.3.1.32

Condition/Ht: T852
 Form: 5.5 in. Forging
 Specimen Type: CT
 Orientation: S-L
 Stress Ratio: 0.33
 Frequency: 2 - 20 Hz

Yield Strength: 47.2 ksi
 Ult. Strength: 62.3 ksi
 Specimen Thk: 1 in.
 Specimen Width: 3.805 in.
 Ref: AL001



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.72 (min)	2.39
6.	3.09
7.	5.47
8.	8.07
9.	12.5
10.	19.6
13.	61.4
15.97 (max)	1157.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
--------------------------------------	-------------------------------

RMS %
 Error
 20.24

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error

Life Prediction Ratio Summary

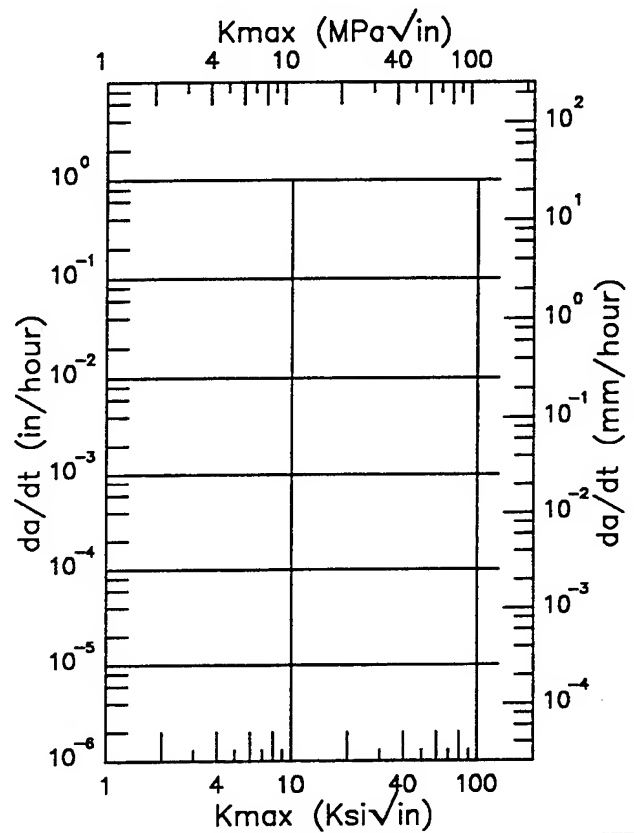
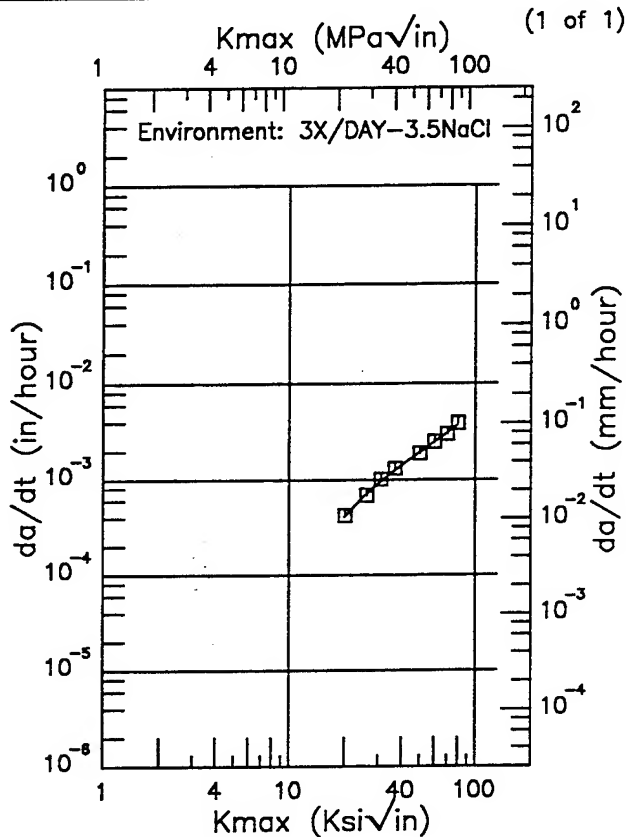
0. .5 .8 1.25 2. ---

Figure 7.11.3.1.32 (Concluded)

2219

Condition/Ht: T37
 Form: 1.5 in. Plate
 Specimen Type: DCB
 Orientation: S-L
 Yield Strength:
 Ult. Strength:

Specimen Thk: 1 in.
 Specimen Width: 5 in.
 A_o:
 K_I_{sec}:
 Ref: 78313



K _{max} (Ksi√in)	da/dt (10 ⁻³ in/hour)
20.00 (min)	0.411
25.	0.661
30.	0.917
35.	1.17
40.	1.42
50.	1.93
60.	2.47
70.	3.08
80.00 (max)	3.76

K_{max} (Ksi√in) da/dt (10⁻³in/hour)

RMS %
 Error
 2.81

RMS %
 Error

Figure 7.11.3.2

TABLE 7.11.3.3

(1 of 1)

K_{Isc} SUMMARY FOR ALUMINUM ALLOY 2219

Condition/ Heat Treat	Prod Form	Test Temp (°F)	Spec Or.	Yield Str (Ksi)	Envir.	Specimen			Prod Thk (in)	Crack (in)	K _Q (Ksi√in)	K _{Isc} (Ksi√in)	Test Time (min)	Test Date	Refer
						Thick (in)	Design	Width (in)							
T37	P	R.T.	S-L	42.1	Industrial Atm	1	CT	2	2	---	27.1	13	---	1973	86688
					Salt-Dichromate- Acetate	1	CT	2	2	---	27.1	9	---	1973	86688
					Seacoast Atm	1	CT	2	2	---	27.1	13	---	1973	86688
					F.C.S.	1	DCB	5.5	1.75	---	32	30.5	75240	1976	RI006
T851	P	R.T.	L-T	50	S.C.S.	1	DCB	5.5	1.75	---	32	27	75240	1976	RI006
						1	DCB	5.5	1.75	---	32	37*	59100	1976	RI006
						1	DCB	5.5	1.75	---	32	39*	61680	1976	RI006
						1	DCB	5.5	1.75	---	32	33*	51720	1976	RI006
					S.T.W.	1	DCB	5.5	1.75	---	32	36*	83520	1976	RI006
						1	DCB	5.5	1.75	---	30	27	51720	1976	RI006
						1	DCB	4	1	---	27	18	---	1968	84331
						1	DCB	5.5	1.75	---	30	29.5	51720	1976	RI006
					3.5% NaCl	1	DCB	5.5	1.75	---	30	29.5	83520	1976	RI006
						1	CT	2	2	---	19.6	19	---	1973	86688
						1	CT	2	2	---	19.6	19	---	1973	86688
						1	CT	2	2	---	19.6	19	---	1973	86688
T87	P	R.T.	S-L	57.7	Industrial Atm	1	CT	2	2	---	19.6	19	---	1973	86688
					Salt-Dichromate- Acetate	1	CT	2	2	---	19.6	19	---	1973	86688
					Seacoast Atm	1	CT	2	2	---	19.6	19	---	1973	86688
					Seacoast Atm	1	CT	2	2	---	19.6	19	---	1973	86688

* specimen thickness does not meet minimum requirements of $2.5 \left(\frac{K_{Isc}}{\sigma_y} \right)^2$

TABLE 7.12.1.2

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2324 AT ROOM TEMPERATURE**

ORIENTATION: L-T		ENVIRONMENT: H.H.A.				
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)		
				ΔK Level (Ksi $\sqrt{\text{in}}$)		
				2.5	5.0	10.0
T39	PLATE	0.33	25		0.56	10.77
						50.0
						100.0

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R

2324

Condition/Ht: T39
 Form: 1.25 in. Plate
 Specimen Type: WOL
 Orientation: L-T
 Frequency: 25 Hz
 Environment: H.H.A.; RT

Yield Strength:
 Ult. Strength:
 Specimen Thk: 0.249 – 0.251 in.
 Specimen Width: 2.545 – 2.547 in.
 Ref: AL011

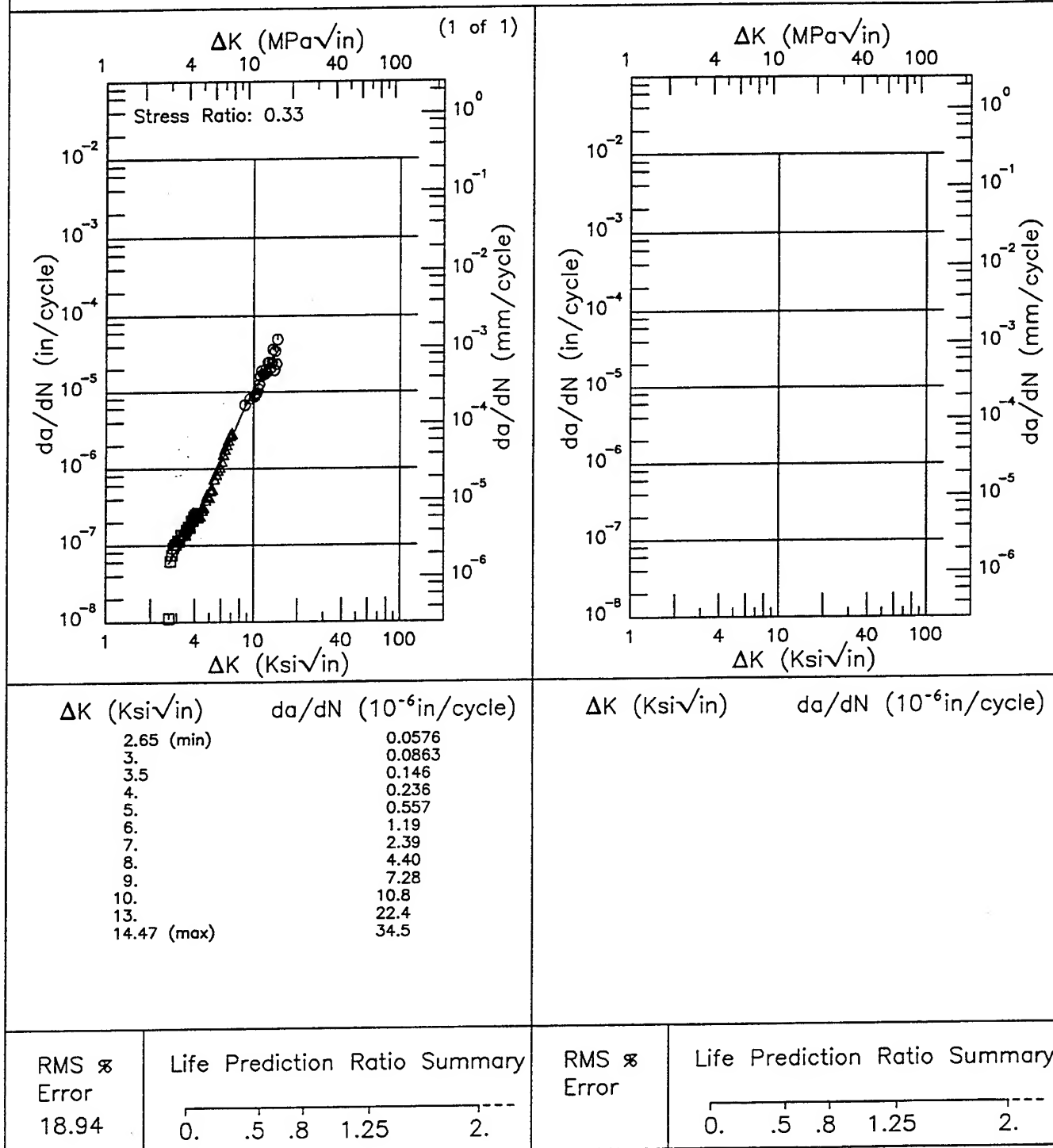


Figure 7.12.3.1

TABLE 7.13.1.1

1 of 1

**MEAN PLANE STRAIN FRACTURE TOUGHNESS
FOR ALUMINUM 2000/6000 SERIES ALLOY 2419 AT ROOM TEMPERATURE**

Product Form	Condition/Heat Treatment	K_{Ic} (ksi \sqrt{in})							
		Specimen Orientation							
		L-T		T-L		S-L			
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev
Plate	T851	42.6	5.3	23	37.2	4.2	52	24.8	2.5
									3

TABLE 7.13.1.2.1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2419 AT ROOM TEMPERATURE**

ORIENTATION: L-T				ENVIRONMENT: Lab Air						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
				ΔK Level (K_{SI}/\sqrt{in})						
				2.5	5.0	10.0	20.0	50.0	100.0	
T861	PLATE	0.1	30			6.5	51.72			

TABLE 7.13.1.2.2

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2419 AT ROOM TEMPERATURE

ORIENTATION: T-L

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/ \sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
T861	PLATE	0.1	30			5.32			

TABLE 7.13.2.1

ALUMINUM 2419 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K ₀₁)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K ₀₁ /in.)	K _{1c} MEAN	STAN DEV		
T851	Plate	2.55	R.T.	L-T	50.1	6.017	2.506	CT	3.129	2.40	49.10	42.6	5.3	1978	MPC01
		2.55			50.1	5.959	2.583	CT	3.158	1.98	44.60			1978	MPC01
		2.90			50.5	6.057	2.945	CT	3.089	2.11	45.50			1978	MPC01
		2.90			50.7	6.053	2.900	CT	3.087	1.84	43.90			1978	MPC01
		2.90			50.8	6.041	2.897	CT	3.081	1.98	45.50			1978	MPC01
		2.90			51.1	6.052	2.905	CT	3.025	1.44	39.20			1978	MPC01
		2.90			51.4	6.020	2.947	CT	3.070	1.60	41.30			1978	MPC01
		2.00			51.7	4.000	2.000	CT	---	1.14	34.90			1975	UD004
		2.00			51.7	4.000	2.000	CT	---	1.09	34.20			1975	UD004
		2.00			51.7	4.000	2.000	CT	---	1.17	35.30			1975	UD004
		2.55	52.1		3.026	1.501	CT	1.513	1.29	38.00	1978			MPC01	
		2.90	52.1		5.962	2.934	CT	3.100	2.30	50.20	1978			MPC01	
		2.90	52.2		5.967	2.837	CT	3.103	2.16	48.90	1978			MPC01	
		2.90	52.4		5.033	2.375	CT	2.587	1.68	43.00	1978			MPC01	
		2.50	52.7		5.988	2.519	CT	3.059	1.64	43.00	1978			MPC01	
		2.50	53.0		6.059	2.558	CT	3.090	2.50	53.00	1978			MPC01	
		3.00	53.2		4.034	1.999	CT	2.017	1.36	39.70	1978			MPC01	
		3.00	53.2		4.035	1.999	CT	2.058	1.44	40.70	1978			MPC01	
		2.90	53.4		4.951	2.374	CT	2.624	1.84	46.40	1978			MPC01	
		2.90	53.8		4.992	1.750	CT	2.596	1.15	36.90	1978			MPC01	
		2.90	54.0		6.025	2.833	CT	3.193	1.88	48.50	1978			MPC01	
		2.90	54.9		5.019	1.750	CT	2.610	1.26	39.00	1978			MPC01	
		2.90	55.8		5.006	1.750	CT	2.603	1.19	38.60	1978			MPC01	

TABLE 7.13.2.1 (CONTINUED)

2 of 5

2419

ALUMINUM 2419 K ₁₀															
CONDITION	PRODUCT		TEST TEMP (°F)	SPRG OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K ₁₀ TYS) ^a (in.)	K ₁₀			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K ₁₀ (Ksi/in.)	K ₁₀ MEAN	STAN DEV		
T851	Plate	1.75	R.T.	T-L	46.8	5.033	1.761	CT	2.567	1.48	36.30	37.2	4.2	1978	MPC01
		1.75			47.0	5.012	1.758	CT	2.556	1.40	35.70			1978	MPC01
		1.75			47.0	2.991	1.399	CT	1.585	1.19	32.80			1978	MPC01
		1.75			47.2	4.994	1.762	CT	2.597	1.52	37.10			1978	MPC01
		1.75			47.4	3.019	1.397	CT	1.570	1.29	34.20			1978	MPC01
		1.75			47.4	4.994	1.757	CT	2.597	1.52	37.10			1978	MPC01
		1.75			47.4	4.985	1.761	CT	2.592	1.52	37.00			1978	MPC01
		1.75			47.6	5.004	1.762	CT	2.602	1.60	38.10			1978	MPC01
		1.75			47.6	2.994	1.397	CT	1.587	1.29	34.70			1978	MPC01
		1.75			47.6	4.987	1.762	CT	2.593	1.60	38.20			1978	MPC01
		1.75			47.7	2.995	1.398	CT	1.587	1.12	32.10			1978	MPC01
		1.75			47.7	4.975	1.759	CT	2.587	1.36	35.70			1978	MPC01
		2.55			49.0	4.998	2.401	CT	2.649	2.11	45.30			1978	MPC01
		1.75			49.0	2.981	1.402	CT	1.550	1.29	35.30			1978	MPC01
		2.90			49.2	6.000	2.951	CT	3.180	1.84	42.40			1978	MPC01
		2.90			49.4	6.028	2.900	CT	3.195	1.48	38.20			1978	MPC01
		2.90			49.4	6.019	2.896	CT	3.130	2.20	46.50			1978	MPC01
		2.00			49.7	2.996	1.402	CT	1.558	0.99	31.80			1978	MPC01
		2.90			49.9	4.982	2.374	CT	2.690	1.60	40.40			1978	MPC01
		2.90			50.1	6.000	2.940	CT	3.180	1.84	43.30			1978	MPC01
		2.55			50.3	5.004	2.401	CT	2.652	1.68	41.50			1978	MPC01
		2.90			50.5	6.014	2.912	CT	3.067	1.08	33.70			1978	MPC01
		2.90			50.7	5.051	1.747	CT	2.576	1.56	40.30			1978	MPC01

TABLE 7.13.2.1 (CONTINUED)

ALUMINUM 2419 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (K _{sd})	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} /TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (K _{sd} /in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.90	R.T. Cont'd	T-L Cont'd	50.9	6.047	2.931	CT	3.205	1.56	40.40	Cont'd	Cont'd	1978	MPC01
		2.90			51.0	5.946	2.937	CT	3.092	1.22	36.10			1978	MPC01
		2.90			51.0	4.989	1.747	CT	2.594	1.72	42.40			1978	MPC01
		2.55			51.1	3.015	1.500	CT	1.568	1.15	34.80			1978	MPC01
		2.90			51.1	4.989	2.375	CT	2.644	1.36	38.00			1978	MPC01
		3.00			51.2	4.026	1.996	CT	2.063	0.78	29.10			1978	MPC01
		2.50			51.2	6.049	2.511	CT	3.085	1.68	42.30			1978	MPC01
		3.00			51.2	4.016	1.999	CT	2.048	0.78	29.10			1978	MPC01
		2.90			51.4	5.043	1.746	CT	2.572	1.48	40.00			1978	MPC01
		2.50			51.4	5.992	2.534	CT	3.166	1.44	39.40			1978	MPC01
		3.00			51.6	3.022	1.403	CT	1.541	1.22	36.50			1978	MPC01
		2.90			52.1	5.029	1.747	CT	2.565	1.72	43.40			1978	MPC01
		3.00			52.3	3.983	1.999	CT	2.071	1.08	34.90			1978	MPC01
		3.00			52.3	3.979	1.999	CT	2.069	1.19	36.50			1978	MPC01
		2.55			52.3	5.968	2.501	CT	3.163	1.12	35.10			1978	MPC01
		2.00			52.5	4.000	2.000	CT	---	0.85	30.60			1975	UD004
		2.00			52.5	4.000	2.000	CT	---	0.89	31.30			1975	UD004
		2.90			52.5	5.026	1.746	CT	2.563	1.68	43.10			1978	MPC01
		2.00			52.5	4.000	2.000	CT	---	0.95	32.30			1975	UD004
		2.90			52.5	5.051	1.748	CT	2.576	1.40	39.60			1978	MPC01

TABLE 7.13.2.1 (CONTINUED)

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2419

ALUMINUM 2419 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi√in.)	K _{1c} MEAN	STAN DEV		
T851 Cont'd	Plate Cont'd	2.90	R.T. Cont'd	T-L Cont'd	52.8	4.983	1.749	CT	2.641	1.12	35.90	Cont'd	Cont'd	1978	MPC01
		2.90			52.8	5.048	1.750	CT	2.625	0.99	33.40			1978	MPC01
		2.55			52.9	5.973	2.461	CT	3.046	1.19	36.60			1978	MPC01
		2.90			53.5	4.998	1.750	CT	2.649	1.08	35.80			1978	MPC01
		2.90			53.6	5.985	2.937	CT	3.172	1.80	46.00			1978	MPC01
		2.90			53.6	5.063	1.750	CT	2.677	1.05	35.00			1978	MPC01
		2.90			53.7	4.977	2.374	CT	2.638	1.26	38.60			1978	MPC01
		2.55			53.9	3.020	1.498	CT	1.510	0.87	32.10			1978	MPC01
		2.90			54.6	5.029	1.747	CT	2.565	1.36	40.70			1978	MPC01
		2.00			51.7	4.000	2.000	CT	...	0.49	22.90			1975	UD004
T851	Plate	2.00	R.T.	S-T	51.7	4.000	2.000	CT	...	0.50	23.20	24.0	1.5	1975	UD004
		2.00			51.7	4.000	2.000	CT	...	0.49	22.90			1975	UD004
		2.90			52.4	2.006	1.001	CT	1.023	0.52	24.20			1978	MPC01
		2.90			53.2	1.981	1.001	CT	1.030	0.48	23.80			1978	MPC01
		2.90			54.4	1.994	1.001	CT	1.037	0.60	26.80			1978	MPC01
		3.00			50.4	2.018	0.999	CT	1.029	0.57	24.40			1978	MPC01
T851	Plate	3.00	R.T.	S-L	50.4	1.989	1.000	CT	1.034	0.48	22.50	24.8	2.5	1978	MPC01
		3.00			51.6	1.994	1.000	CT	0.997	0.70	27.40			1978	MPC01
		2.00			47.6	4.000	2.000	CT	...	1.17	32.60			1975	UD004
T851	Plate	2.00	200	L-T	47.6	4.000	2.000	CT	...	1.19	32.90	32.4	0.6	1975	UD004
		2.00			47.6	4.000	2.000	CT	...	1.11	31.70			1975	UD004
		2.00			47.6	4.000	2.000	CT	...	1.11	31.70			1975	UD004

TABLE 7.13.2.1 (CONCLUDED)

ALUMINUM 2419 K _{Ic}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (KSI)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{Ic} TYS) ² (in.)	K _{Ic}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{Ic} (KSI√in.)	K _{Ic} MEAN	STAN DEV		
T851	Plate	2.00	200	T-L	47.1	4.000	2.000	CT	---	0.97	29.30	28.8	0.5	1975	UD004
		2.00				4.000	2.000	CT	---	0.94	28.90			1975	UD004
		2.00				4.000	2.000	CT	---	0.90	28.30			1975	UD004
T851	Plate	2.00	300	L-T	43.8	4.000	2.000	CT	---	1.32	31.80	32.0	0.2	1975	UD004
		2.00				4.000	2.000	CT	---	1.35	32.20			1975	UD004
		2.00				4.000	2.000	CT	---	1.33	31.90			1975	UD004
T851	Plate	2.00	300	T-L	43.2	4.000	2.000	CT	---	1.09	28.50	28.7	0.3	1975	UD004
		2.00				4.000	2.000	CT	---	1.12	28.90			1975	UD004

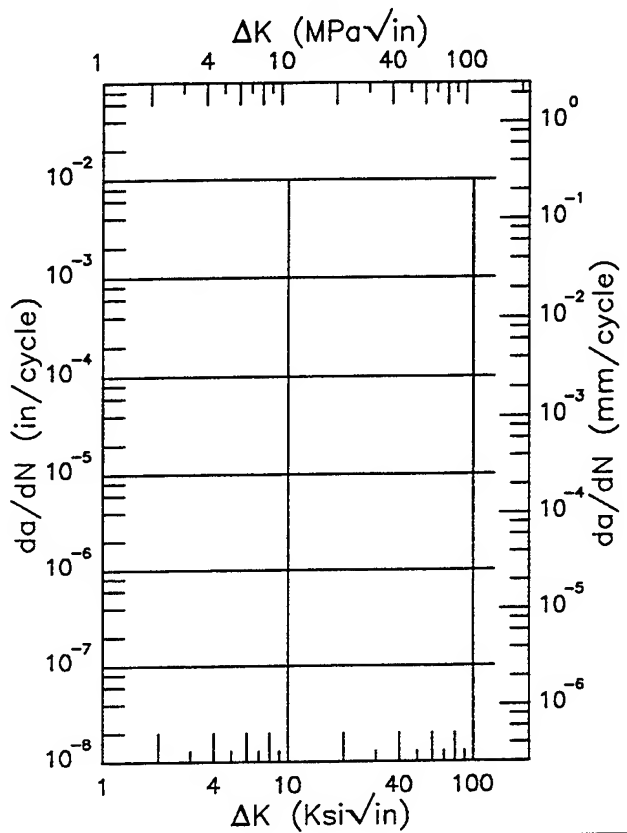
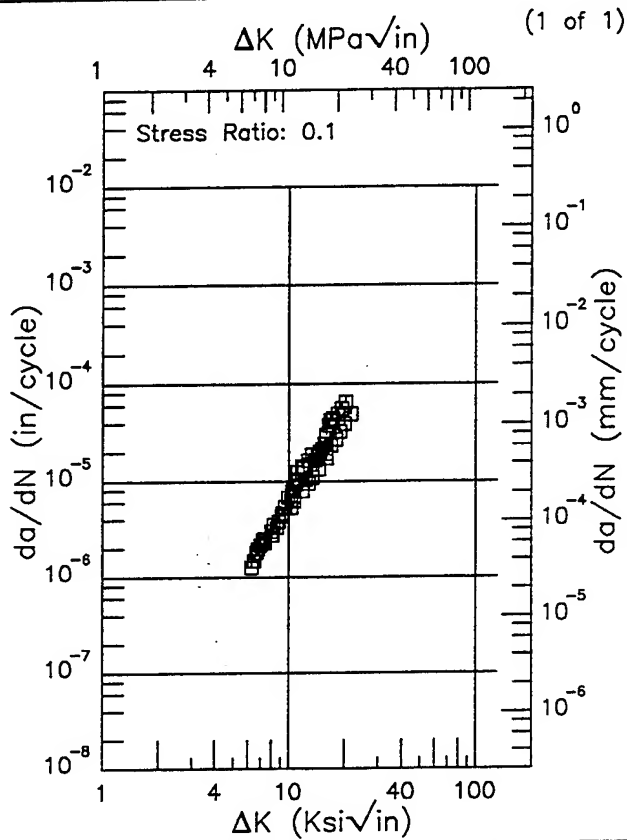
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R

2419

Condition/Ht: T851
 Form: 2 in. Plate
 Specimen Type: WOL
 Orientation: L-T
 Frequency: 30 Hz
 Environment: LAB AIR; RT

Yield Strength: 51.7 ksi
 Ult. Strength: 66.9 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 1.85 in.
 Ref: UD004



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
6.26 (min)	1.46
7.	1.96
8.	3.00
9.	4.53
10.	6.50
13.	14.2
16.	25.4
20.	51.7
21.39 (max)	51.0

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
--------------------------------------	-------------------------------

RMS %
 Error
 19.73

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

RMS %
 Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2. ---

Figure 7.13.3.1.1

Condition/Ht: T851
 Form: 2 in. Plate
 Specimen Type: WOL
 Orientation: T-L
 Frequency: 30 Hz
 Environment: LAB AIR; RT

Yield Strength: 52.5 ksi
 Ult. Strength: 66.6 ksi
 Specimen Thk: 0.5 in.
 Specimen Width: 1.85 in.
 Ref: UD004

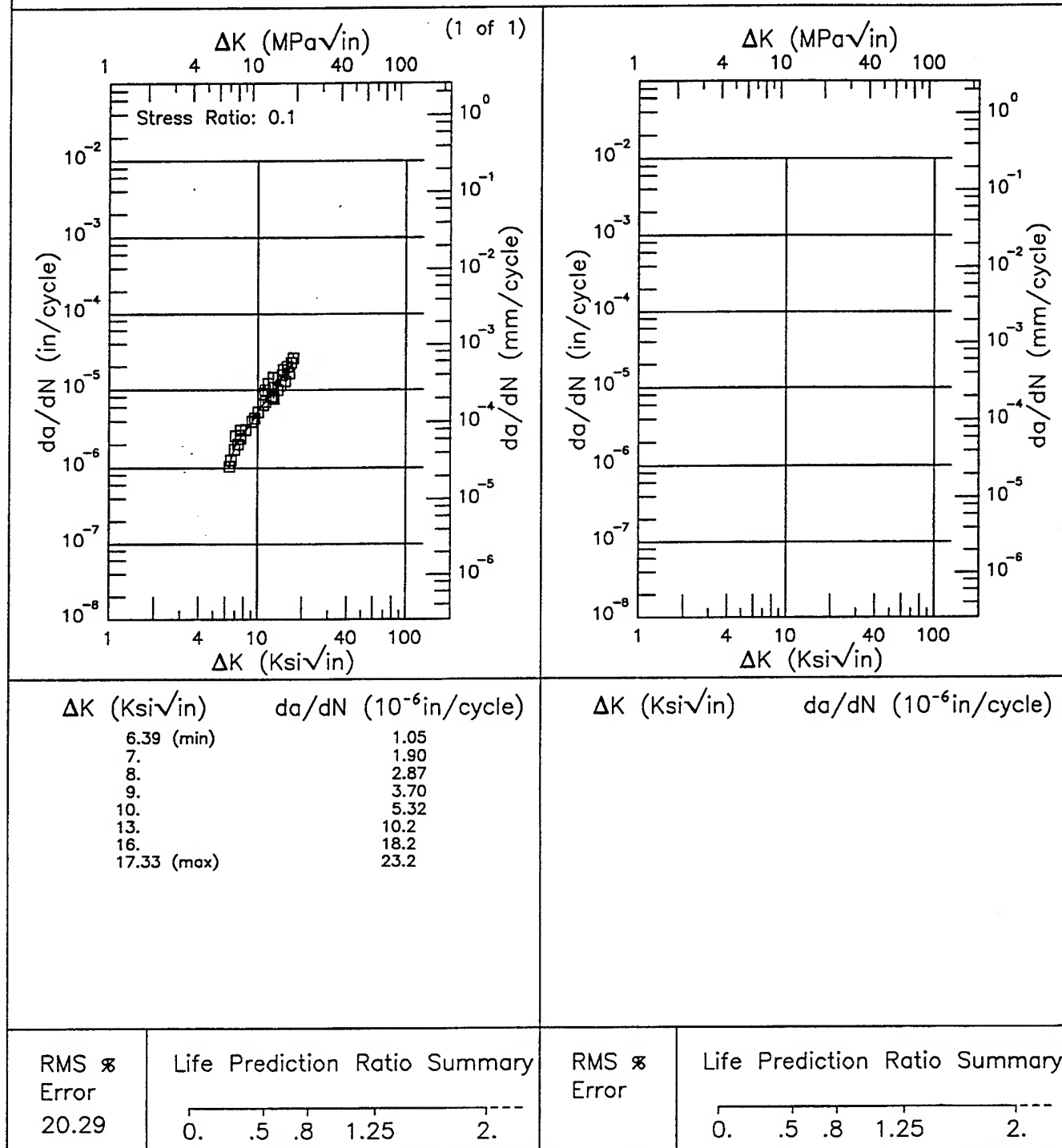


Figure 7.13.3.1.2

TABLE 7.14.1.1
 MEAN PLANE STRAIN FRACTURE TOUGHNESS
 FOR ALUMINUM 2000/6000 SERIES ALLOY 2618 AT ROOM TEMPERATURE

Product Form	Condition/Heat Treatment	K_{Ic} (ksi \sqrt{in})							
		Specimen Orientation							
		L-T			T-L			S-L	
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	n
Plate	T651	---	---	---	---	---	---	14.9	12

TABLE 7.14.1.2

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
2618 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
T81	SHEET	0.4	2			7.77			

TABLE 7.14.2.1

ALUMINUM 2618 K _{1c}															
CONDITION	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 • (K _{1c} TYS) ^a (in.)	K _{1c}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K _{1c} (Ksi)($\sqrt{in.}$)	K _{1c} MEAN	STAN DEV		
T651	Plate	3.34	R.T.	S-L	54.8	1.990	0.999	CT	1.014	0.21	15.90	14.9	1.2	1973	86213
		3.34			54.8	2.000	0.999	CT	1.015	0.21	15.80			1973	86213
		3.34			55.1	2.000	0.999	CT	1.011	0.23	16.80			1973	86213
		3.34			55.1	2.000	0.999	CT	1.024	0.22	16.50			1973	86213
		3.34			56.3	2.000	0.999	CT	1.028	0.15	13.60			1973	86213
		3.34			56.3	2.000	0.999	CT	1.033	0.16	14.20			1973	86213
		3.34			56.3	2.000	0.999	CT	1.034	0.16	14.10			1973	86213
		3.34			56.8	2.000	0.999	CT	1.011	0.15	13.90			1973	86213
		3.34			56.8	2.000	0.999	CT	1.018	0.14	13.20			1973	86213
		3.34			57.4	2.000	0.999	CT	1.011	0.19	15.70			1973	86213
		3.34			59.2	2.000	0.999	CT	1.008	0.15	14.60			1973	86213
		3.34			59.2	2.000	0.999	CT	1.011	0.15	14.30			1973	86213
T651	Plate	1.37	88	S-L	51.8	1.000	0.500	CT	0.488	0.40	20.70	22.1	1.2	1973	86213
		1.37			51.8	1.000	0.500	CT	0.503	0.49	23.00			1973	86213
		1.37			51.8	1.000	0.500	CT	0.499	0.47	22.50			1973	86213

TABLE 7.14.2.2

1 of 1

ALUMINUM 2618 K _C																				
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}				K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _c	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN	STAN DEV			
BUCKLING OF CRACK EDGES NOT RESTRAINED																				
T61	Sheet	0.06			56.2	2.000	0.064	0.623	0.900	---	36.00	37.87*			49.09*				1973	86213
		0.06	R.T.	L-T	56.2	2.000	0.064	0.623	0.970	34.10	35.70	37.55*			51.80*				1973	86213
		0.06			56.2	2.000	0.064	0.622	0.890	32.70	35.70	37.55*			48.25*				1973	86213
T61	Sheet	0.06			54.2	2.000	0.064	0.621	1.070	32.80	34.10	35.80*			54.12*				1973	86213
		0.06	R.T.	T-L	54.2	2.000	0.064	0.622	0.900	---	33.20	34.92*			45.27*				1973	86213
		0.06			54.2	2.000	0.064	0.623	0.960	32.70	33.90	35.66*			48.76*				1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

R

2618

Condition/Ht: T81

Form: 0.06 in. Sheet

Specimen Type: CCP (max load specified)

Orientation: L-T

Frequency: 2 Hz

Environment: LAB AIR; RT

Yield Strength: 57 ksi

Ult. Strength:

Specimen Thk: 0.064 in.

Specimen Width: 4 in.

Ref: 86734

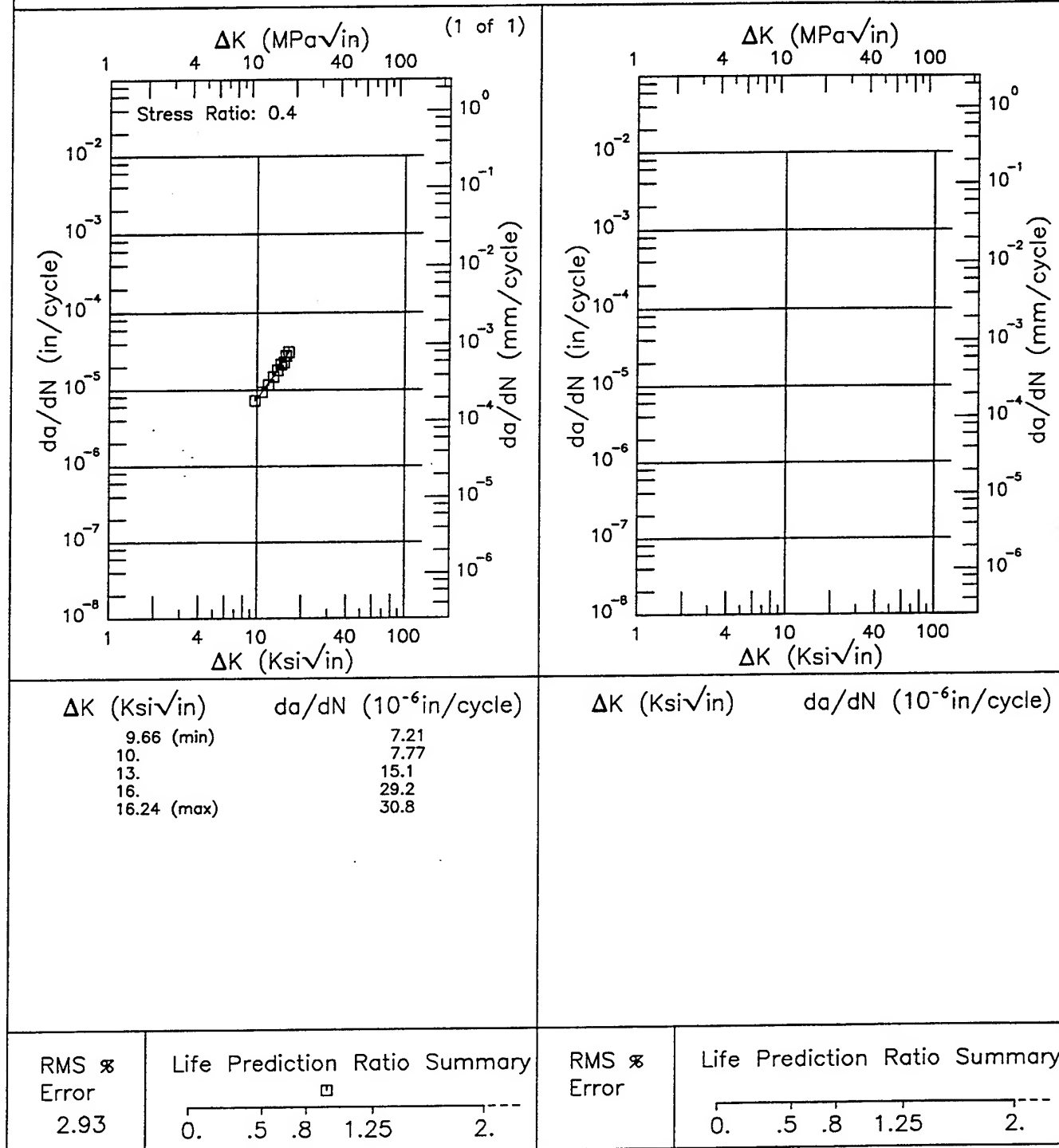


Figure 7.14.3.1.1

Yield Strength: 57 ksi
Ult. Strength:
Specimen Thk: 0.064 in.
Specimen Width: 4 in.
Ref: 86734



TABLE 7.15.1.1
MEAN PLANE STRAIN FRACTURE TOUGHNESS
FOR ALUMINUM 2000/6000 SERIES ALLOY 6061 AT ROOM TEMPERATURE

Product Form	Condition/Heat Treatment	K_{Ic} (ksi \sqrt{in})							
		Specimen Orientation							
		L-T		T-L		S-L			
		Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev	n	Mean K_{Ic}	Std Dev
Plate	T651	---	---	---	26.6	0.9	5	21.5	0.4
									2

TABLE 7.15.1.2

1 of 1

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
6061 AT ROOM TEMPERATURE

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level ($Ksi\sqrt{in}$)				
				2.5	5.0	10.0	20.0	50.0
T851	PLATE		0.1				56.48	
								100.0

TABLE 7.15.2.1

ALUMINUM 6061 K_{Ic}															
CONDITION	PRODUCT		TEST TEMP (F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN			CRACK LENGTH (in.) A	2.5 * $(K_{Ic} TYS)^2$ (in.)	K_{Ic}			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	DESIGN			K_{Ic} (Ksi * $\sqrt{\text{in.}}$)	K_{Ic} MEAN	STAN DEV		
T651	Plate	1.50	-112	T-L	45.5	3.000	1.480	NB	1.500	0.96	28.20	30.1	1.9	1971	84288
		1.50			45.5	3.000	1.480	NB	1.450	1.10	30.30			1971	84288
		1.50			45.5	3.000	1.480	NB	1.510	1.20	31.90			1971	84288
T651	Plate	1.50	R.T.	T-L	43.4	2.000	1.000	NB	1.025	0.90	26.00	26.6	0.9	1972	82880
		1.50			43.4	2.000	1.000	NB	1.018	0.94	26.60			1972	82880
		1.50			43.4	2.000	1.000	NB	0.995	0.98	27.20			1972	82880
		1.50			43.4	3.000	1.480	NB	1.443	0.86	25.40			1972	82880
		1.50			43.4	3.000	1.480	NB	1.508	1.01	27.60			1971	84288
T651	Plate	2.50	R.T.	S-L	41.5	2.000	1.000	CT	0.951	0.83	21.70	21.5	0.4	1973	86688
		2.50			41.5	2.000	1.000	CT	0.930	0.82	21.20			1973	86688
T651	Plate	3.00	88	S-L	39.6	2.500	1.250	CT	1.171	0.72	21.30	21.3	0.3	1973	86213
		3.00			39.6	2.500	1.250	CT	1.181	0.74	21.60			1973	86213
		3.00			39.6	2.490	1.251	CT	1.183	0.71	21.10			1973	86213
T651	Forged Bar	---	84	T-L	40.3	3.000	1.500	CT	1.547	1.29	28.90	---	---	1973	86213
T651	Forged Bar	---	84	S-L	40.3	2.000	1.000	CT	0.987	0.91	24.30	24.3	0.0	1973	86213
		---			40.3	2.000	1.001	CT	0.966	0.91	24.30			1973	86213
T652	Forging	9.00	R.T.	S-T	38.1	2.000	1.000	NB	1.000	0.95	23.40	---	---	1972	82675

TABLE 7.15.2.2

1 of 2

ALUMINUM 6061 K _C																			
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C			DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _o	MAX (Ksi) σ _{max}	K _{app} (Ksi/in.)	K _{app} MEAN	STAN DEV	K _C (Ksi/in.)	K _C MEAN	STAN DEV		
BUCKLING OF CRACK EDGES NOT RESTRAINED																			
T6	Sheet	0.06	R.T.	L-T	41.9	2.000	0.062	0.622	1.240	---	28.50	29.98*	---	---	---	53.05*	---	1973	86213
		0.06			41.9	2.000	0.062	0.620	1.230	---	28.80	30.23*				53.09*		1973	86213
		0.06			41.9	2.000	0.062	0.619	1.360	---	28.40	29.75*				59.80*		1973	86213
		0.06			43.4	2.000	0.062	0.622	1.280	---	30.10	31.66*				58.31*		1973	86213
		0.06			43.4	2.000	0.062	1.300	---	30.00	31.56*	59.31*				1973		86213	
		0.06			43.4	2.000	0.062	1.230	---	30.00	31.49*	55.30*				1973		86213	
T6	Sheet	0.12	R.T.	L-T	44.1	4.000	0.127	1.590	2.864	---	26.70	46.85*	---	---	86.22*	---	1973	86213	
		0.12			44.5	4.000	0.127	1.592	3.111	---	26.90	47.24*			101.60*		1973	86213	
T6	Sheet	0.06	R.T.	L-T	41.4	15.810	0.062	4.000	---	---	28.20	73.61*	---	---	---	---	---	1973	86213
		0.06			41.4	15.810	0.062	3.020	4.230	---	32.00	71.31*				86.33*		1973	86213
		0.06			41.4	15.820	0.062	5.980	7.000	---	21.60	72.72*				81.73*		1973	86213
		0.06			41.4	15.820	0.063	1.000	1.230	---	39.10	49.13*				54.55*		1973	86213
T6	Sheet	0.06	R.T.	T-L	40.7	2.000	0.062	0.623	1.280	---	28.60	30.08*	---	---	---	55.40*	---	1973	86213
		0.06			41.8	2.000	0.062	0.617	1.320	---	29.60	30.95*				59.74*		1973	86213
		0.06			41.8	2.000	0.062	0.622	1.130	---	29.80	31.35*				49.97*		1973	86213
		0.06			41.8	2.000	0.062	0.621	1.100	---	30.00	31.49*				48.93*		1973	86213
		0.06			40.7	2.000	0.063	0.620	1.110	---	28.20	29.60*				46.42*		1973	86213
		0.06			40.7	2.000	0.063	0.619	0.980	---	28.30	29.65*				41.43*		1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

TABLE 7.15.2.2 (CONCLUDED)

ALUMINUM 6061 K _C																		
CONDITION HEAT TREAT	PRODUCT		TEST TEMP (°F)	SPEC OR	YIELD STR (Ksi)	SPECIMEN		CRACK LENGTH		GROSS STRESS		K _{app}			K _C		DATE	REFER
	FORM	THICK (in.)				WIDTH (in.) W	THICK (in.) B	INIT (in.) 2a _i	FINAL (in.) 2a _f	ONSET (Ksi) σ _y	MAX (Ksi) σ _{max}	K _{app} (Ksi√in)	K _{app} MEAN	STAN DEV	K _C (Ksi√in)	K _C MEAN			STAN DEV
BUCKLING OF CRACK EDGES NOT RESTRAINED																		
T6	Sheet	0.06	R.T.	T-L	40.8	15.810	0.062	6.010	7.000	---	20.50	69.26*	---	---	77.58*	---	1973	86213
		0.06			40.8	15.820	0.062	1.000	1.550	---	37.40	46.99*			58.71*		1973	86213
		0.06			40.8	15.810	0.063	3.010	4.040	---	30.10	66.95*			79.03*		1973	86213
		0.06			40.8	15.820	0.063	4.000	---	---	27.00	70.48*			---		1973	86213
T651	Plate	0.25	R.T.	L-T	45.9	4.000	0.250	1.730	3.171	---	25.80	48.22*	---	---	101.74*	---	1973	86213
		0.25			45.9	4.000	0.251	1.577	2.956	---	27.60	48.12*			94.20*		1973	86213
T651	Plate	0.50	R.T.	L-T	44.1	4.000	0.503	1.600	---	13.40	28.90	50.94*	---	---	---	---	1973	86213
		0.50			46.8	4.000	0.504	1.760	---	13.40	26.40	50.01*			---		1973	86213

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

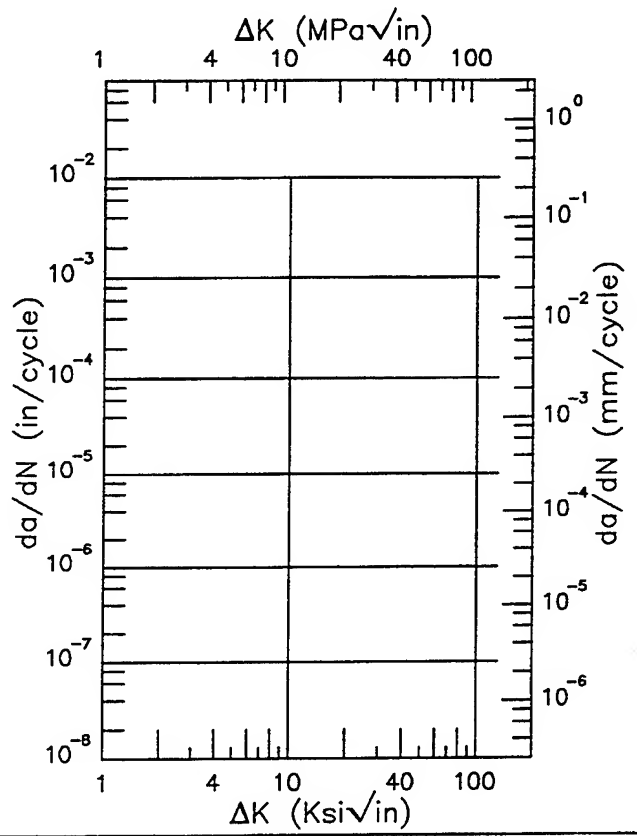
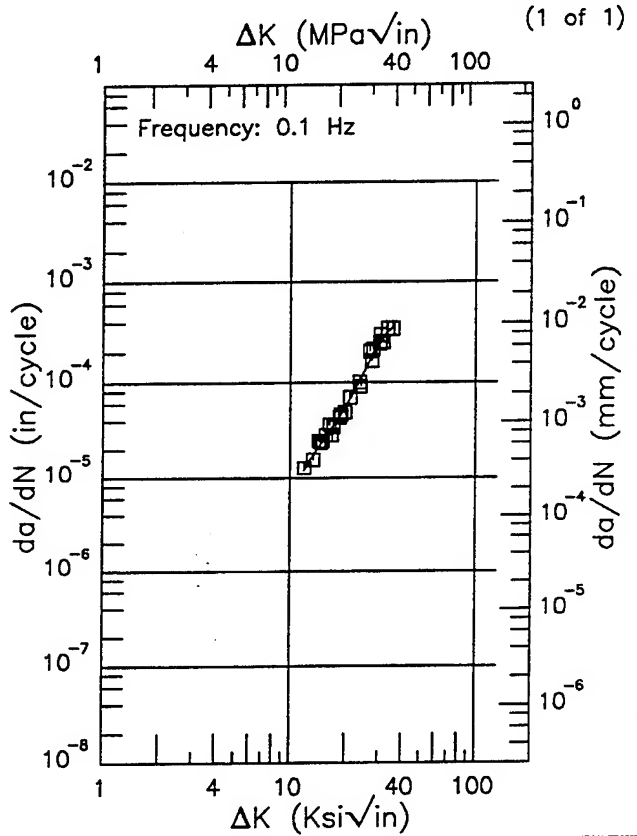
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F

6061

Condition/Ht: T651
 Form: 1 in. Plate
 Specimen Type: NB - 3 pt
 Orientation: L-T
 Stress Ratio:
 Environment: LAB AIR; RT

Yield Strength: 38 ksi
 Ult. Strength:
 Specimen Thk: 0.5 in.
 Specimen Width: 2.5 in.
 Ref: 81507



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
11.89 (min)	12.1
13.	16.0
16.	30.0
20.	55.5
25.	128.
30.	262.
35.	346.
35.46 (max)	361.

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

RMS % Error	Life Prediction Ratio Summary
9.98	

RMS % Error	Life Prediction Ratio Summary

Figure 7.15.3.1

TABLE 7.15.3.3

(1 of 1)

K_{Isec} SUMMARY FOR ALUMINUM ALLOY 6061

Condition/ Heat Treat	Prod Form	Test Temp (°F)	Spec Or.	Yield Str (Ksi)	Envir.	Specimen			Prod Thk (in)	Crack (in)	K _Q (Ksi√in)	K _{Isec} (Ksi√in)	Test Time (min)	Test Date	Refer
						Thick (in)	Design	Width (in)							
T6	S	R.T.	S-L	---	Aerzine 50	0.125	WOL	1.3	0.12	---	---	28*	---	1974	88700
					Aerzine 50/1% CO ₂	0.125	WOL	1.3	0.12	---	---	19.6*	---	1974	88700
					Matheson Coleman Bell 97% Hydrozine /3% H ₂ O	0.125	WOL	1.3	0.12	---	---	16.4*	---	1974	88700
					Propellant Grade Hydrozine	0.125	WOL	1.3	0.12	---	---	25*	---	1974	88700
					Unsymmetrical Dimethyl Hydrozine	0.125	WOL	1.3	0.12	---	---	19.7*	---	1974	88700
T651	P	R.T.	S-L	41.6	Industrial Atm	1	CT	2	2.5	---	21.4	20	---	1973	86688
					Salt-Dichromate- Acetate	1	CT	2	2.5	---	21.4	20	---	1973	86688
					Seacoast Atm	1	CT	2	2.5	---	21.4	20	---	1973	86688
T652	F	R.T.	S-L	35.3	Seawater	0.7	CANT	1.4	6	---	29.6	26*	---	1972	82675
				38.1	Seawater	1	CANT	2	9	---	27.4	24	---	1972	82675

* specimen thickness does not meet minimum requirements of $2.5 \left(\frac{K_{Isec}^2}{\sigma_y} \right)$

TABLE 7.16.1.2

FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
A201 AT ROOM TEMPERATURE

ORIENTATION: Unspecified				ENVIRONMENT: Lab Air						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)						
				ΔK Level (Ksi $\sqrt{\text{in}}$)						
				2.5	5.0	10.0	20.0	50.0	100.0	
T7	CASTING	0.1	25		0.31	2.88	21.26			

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R

A201

Condition/Ht: T7

Form: Casting

Specimen Type: CT

Orientation:

Frequency: 25 Hz

Environment: LAB AIR; RT

Yield Strength: 55 ksi

Ult. Strength: 60 ksi

Specimen Thk: 0.366 - 0.374 in.

Specimen Width: 1.999 - 2.002 in.

Ref: WL007

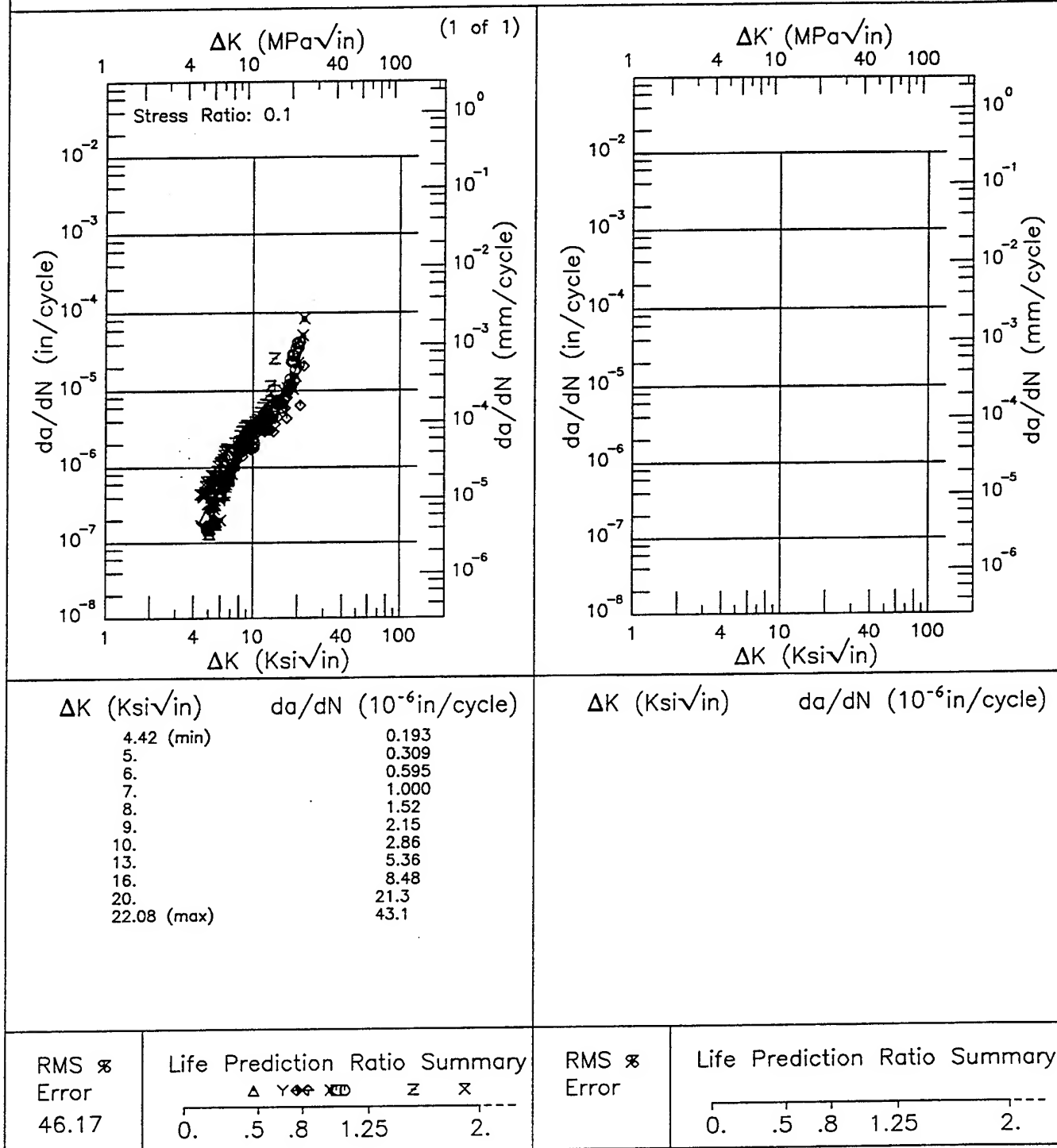


Figure 7.16.3.1.1

Condition/Ht: T7
 Form: Casting
 Specimen Type: CT
 Orientation:
 Stress Ratio: 0.1
 Frequency: 25 Hz

Yield Strength: 44.2 – 54.6 ksi
 Ult. Strength: 47.2 – 59.1 ksi
 Specimen Thk: 0.491 – 0.495 in.
 Specimen Width: 1.997 – 2.053 in.
 Ref: WL008

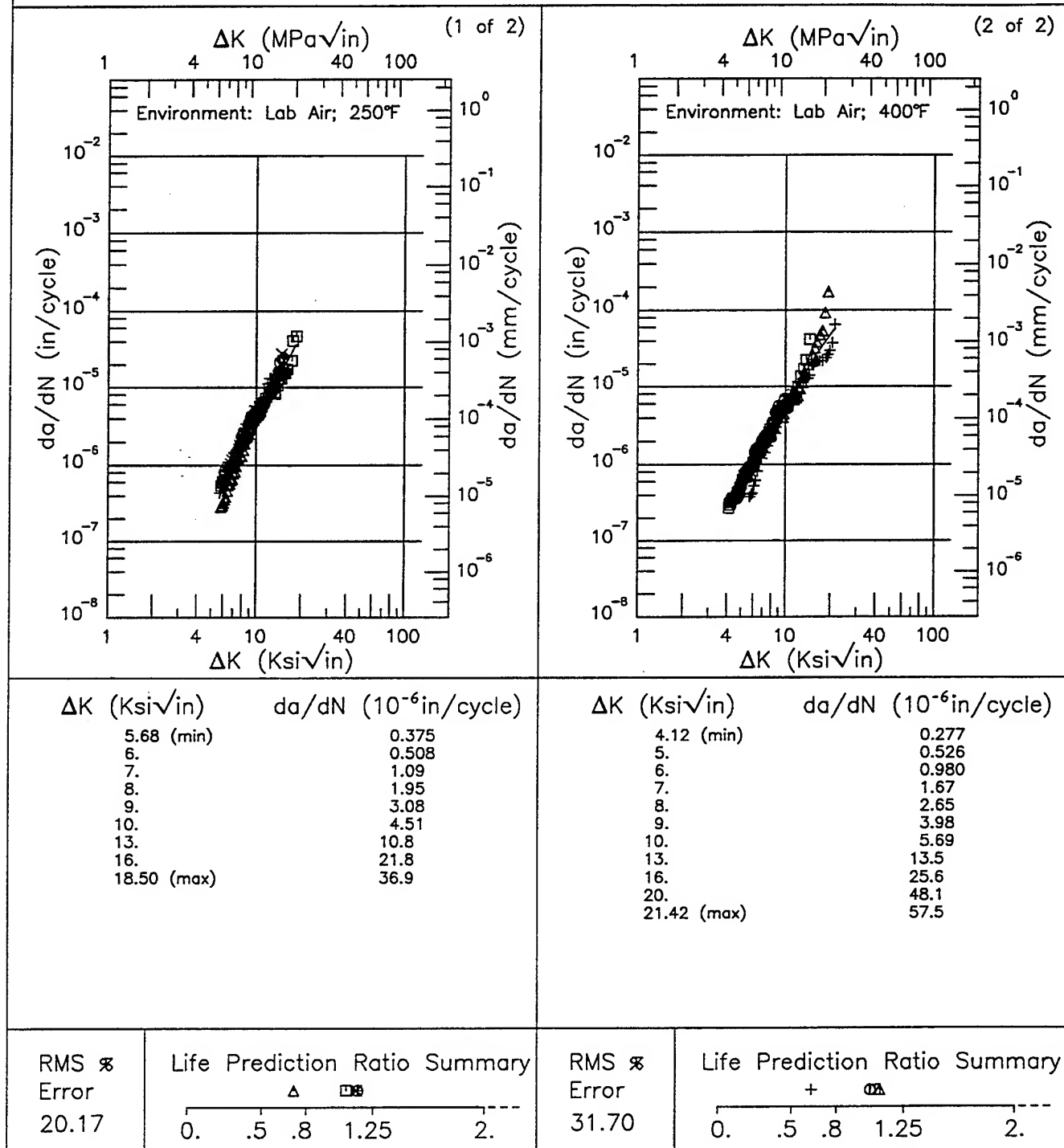


Figure 7.16.3.1.2

TABLE 7.17.1.2

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
A357 AT ROOM TEMPERATURE**

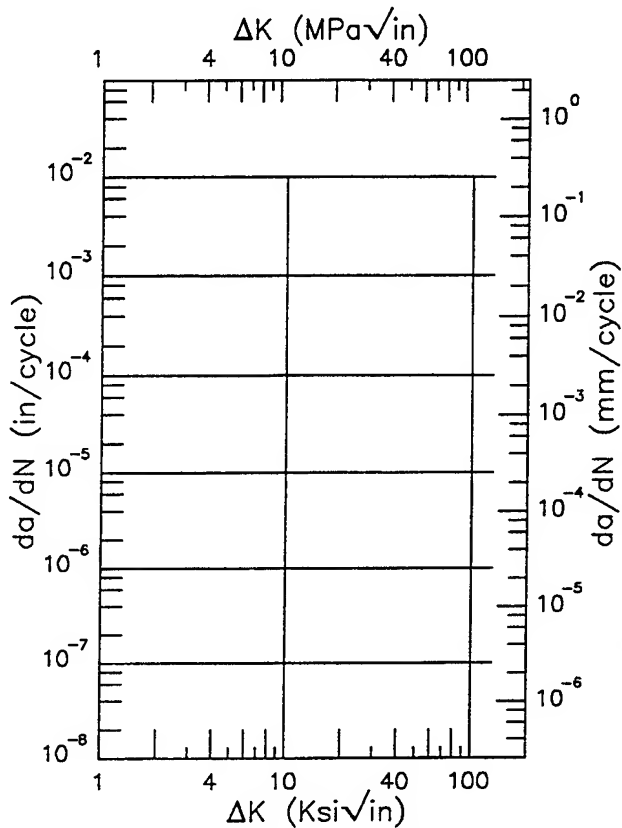
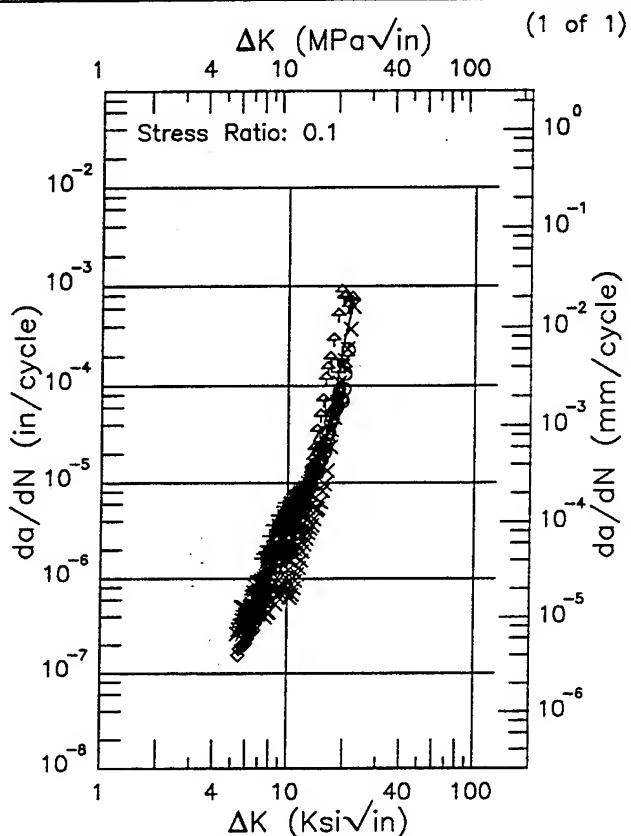
ORIENTATION: Unspecified			ENVIRONMENT: Lab Air						
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (K_{SI}/\sqrt{in})					
				2.5	6.0	10.0	20.0	50.0	100.0
T6	CASTING	0.1	25			2.82	309.7		
T6; SOL. HEAT TREAT 1010F 24HRS; H2O Q AT 160F WITH 9 SEC QUENCH DELAY	CASTING	0.2	25			1.09	158.8		

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R | A357 |

Condition/Ht: T6
 Form: Casting
 Specimen Type: CT
 Orientation:
 Frequency: 25 Hz
 Environment: LAB AIR; RT

Yield Strength: 40 ksi
 Ult. Strength: 50 ksi
 Specimen Thk: 0.372 - 0.393 in.
 Specimen Width: 1.997 - 2.011 in.
 Ref: WL007

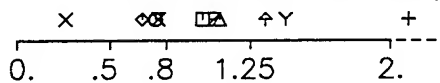


ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.34 (min)	0.221
6.	0.338
7.	0.638
8.	1.13
9.	1.86
10.	2.82
13.	8.27
16.	30.0
20.	310.
22.02 (max)	691.

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

RMS %
 Error
 62.69

Life Prediction Ratio Summary



RMS %
 Error

Life Prediction Ratio Summary

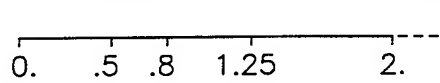


Figure 7.17.3.1.1

Condition/Ht: T6
 Form: Casting
 Specimen Type: CT
 Orientation:
 Stress Ratio: 0.1
 Frequency: 25 Hz

Yield Strength: 35.3 - 39.3 ksi
 Ult. Strength: 35.8 - 43.3 ksi
 Specimen Thk: 0.468 - 0.474 in.
 Specimen Width: 2.049 - 2.052 in.
 Ref: WL008

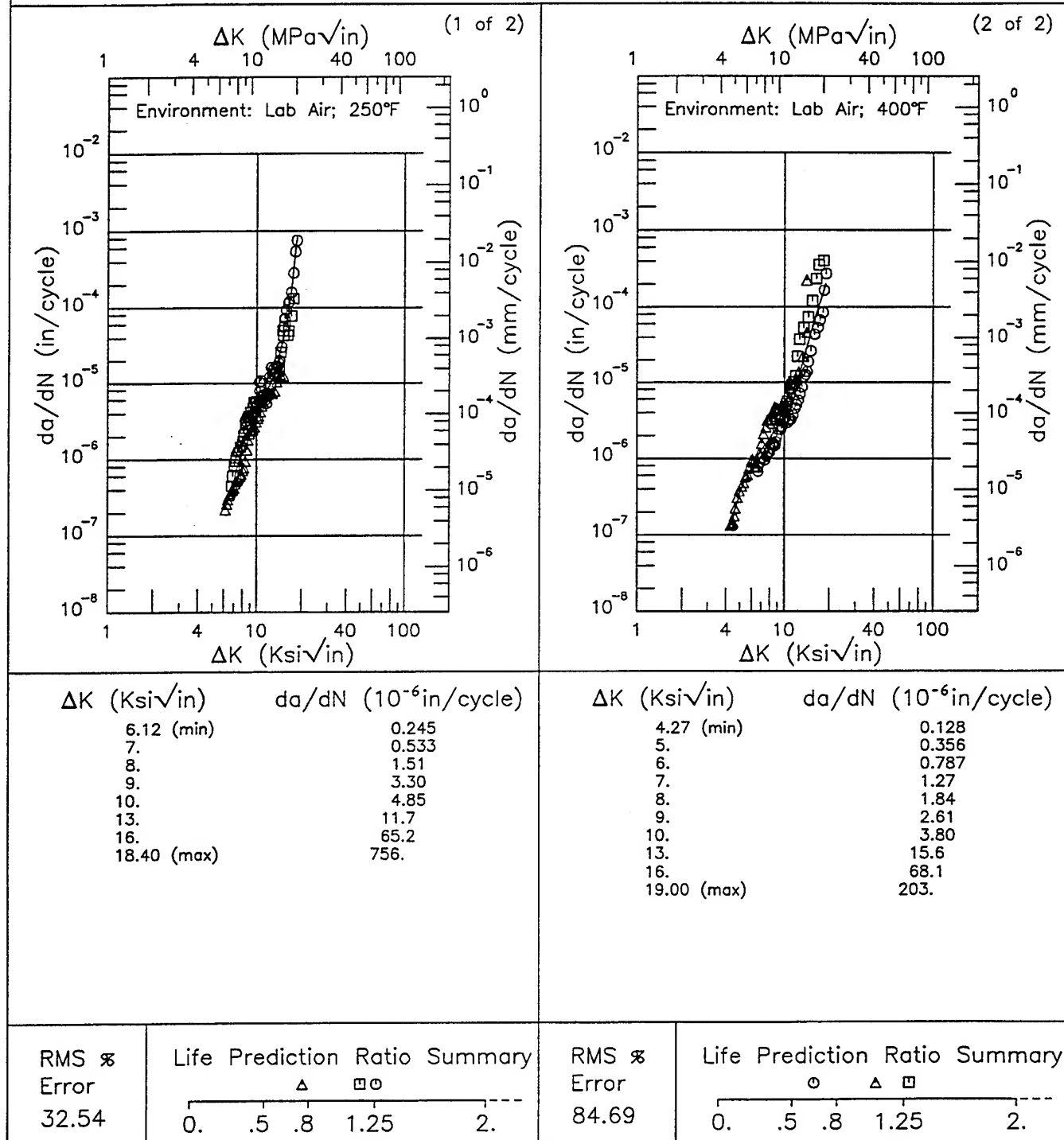


Figure 7.17.3.1.2

R | A357 |

Condition/Ht: T6; SOL. HEAT TREAT 1010F 24HRS;
H2O Q AT 160F WITH 9 SEC QUENCH DELAY

Form: Casting

Specimen Type: CT

Orientation:

Frequency: 25 Hz

Environment: LAB AIR; RT

Yield Strength: 42.1 - 45.7 ksi

Ult. Strength: 47.6 - 51.2 ksi

Specimen Thk: 0.12 - 0.122 in.

Specimen Width: 1.991 - 2.001 in.

Ref: WL006

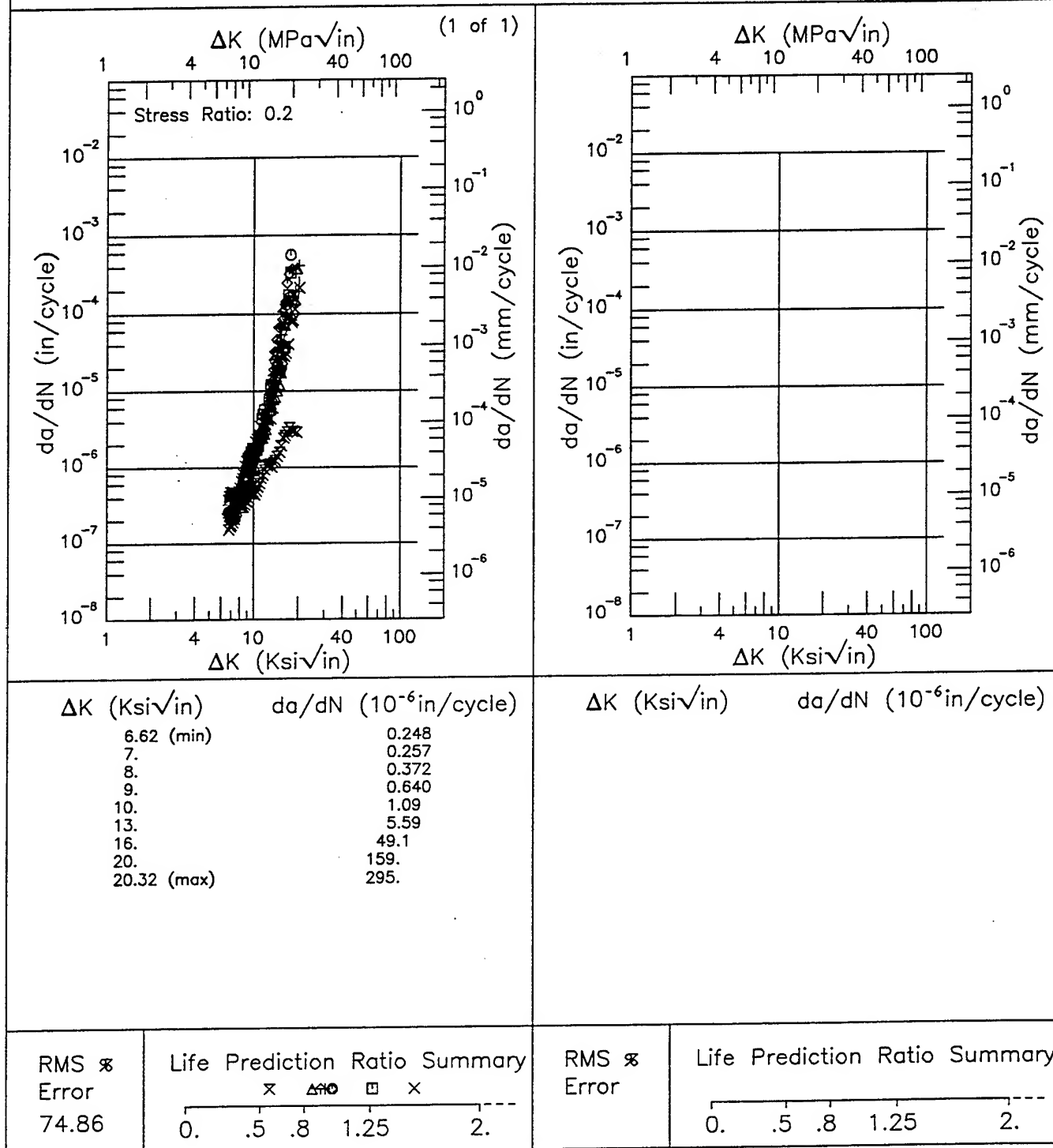


Figure 7.17.3.1.3

TABLE 7.18.1.2.1

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
AL905XL AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level ($K\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
Unspecified	FORGING	0.1	10	0.3	2.68				
		0.1	25	0.85	4.15				
		0.1	30	0.33	4.48				
		0.1				11.1	49.74		

TABLE 7.18.1.2.2

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
AL905XL AT ROOM TEMPERATURE**

ORIENTATION: T-L

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi/in)					
				2.5	5.0	10.0	20.0	50.0	100.0
Unspecified	FORGING	0.1	10	0.28	3.05				
		0.1	30	0.34	2.58				
		0.1			0.98	8.07	43.62		
		0.33			3.15	19.17			

TABLE 7.18.1.2.3

1 of 1

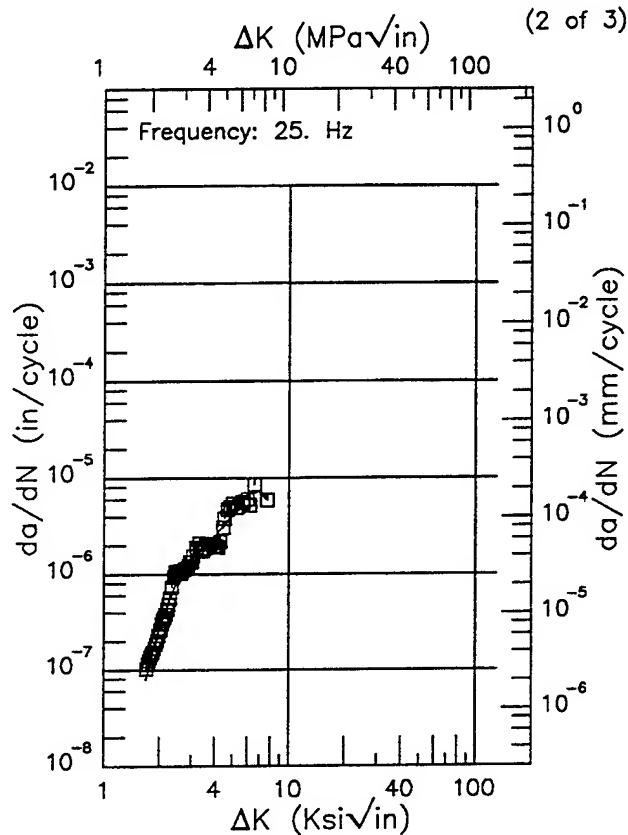
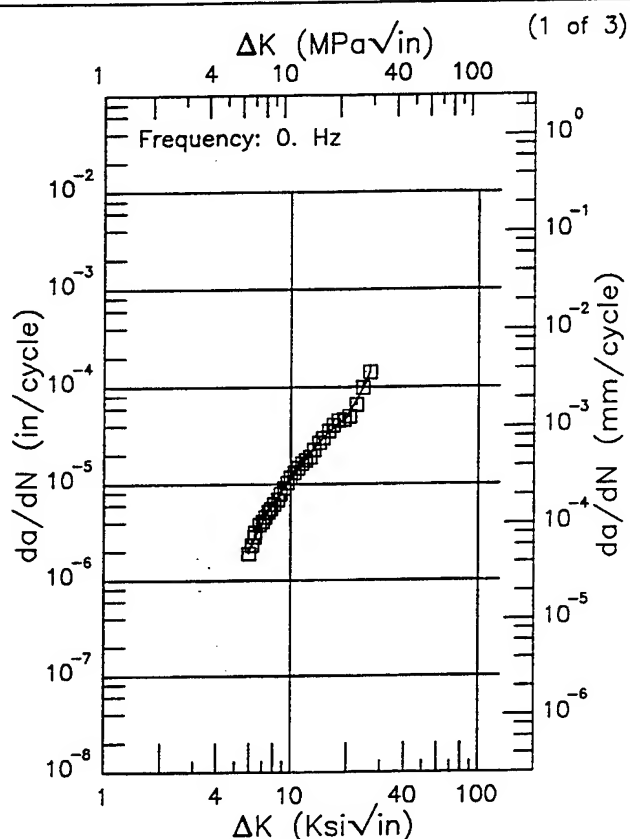
**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
AL905XL AT ROOM TEMPERATURE**

ORIENTATION: S-T		ENVIRONMENT: Lab Air							
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level ($K\sqrt{in}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
Unspecified	FORGING	0.1	10	0.31	2.96				
		0.1	25	0.52	3.86	11.25			
		0.1	30		4.86				
		0.1			0.07	0.05	103.53		
		0.33			1.28	7.84			

F AL905XL

Condition/Ht:
Form: Forging
Specimen Type: CT
Orientation: L-T
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 60 – 60.3 ksi
Ult. Strength: 71.9 – 72.7 ksi
Specimen Thk: 0.25 in.
Specimen Width: 1.597 – 1.602 in.
Ref: WL002



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
5.91 (min)	1.98
6.	2.13
7.	4.03
8.	6.19
9.	8.52
10.	11.1
13.	21.9
16.	34.9
20.	49.7
25.	110.
26.27 (max)	142.

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
1.70 (min)	0.0792
2.	0.282
2.5	0.845
3.	1.41
3.5	1.90
4.	2.42
5.	4.15
6.	6.72
7.	7.32
7.64 (max)	5.96

RMS %
Error
4.84

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

RMS %
Error
16.27

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

Figure 7.18.3.1.1

AL905XL

F

Condition/Ht:
 Form: Forging
 Specimen Type: CT
 Orientation: L-T
 Stress Ratio: 0.1
 Environment: LAB AIR; RT

Yield Strength: 60 – 60.3 ksi
 Ult. Strength: 71.9 – 72.7 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 1.597 – 1.602 in.
 Ref: WL002

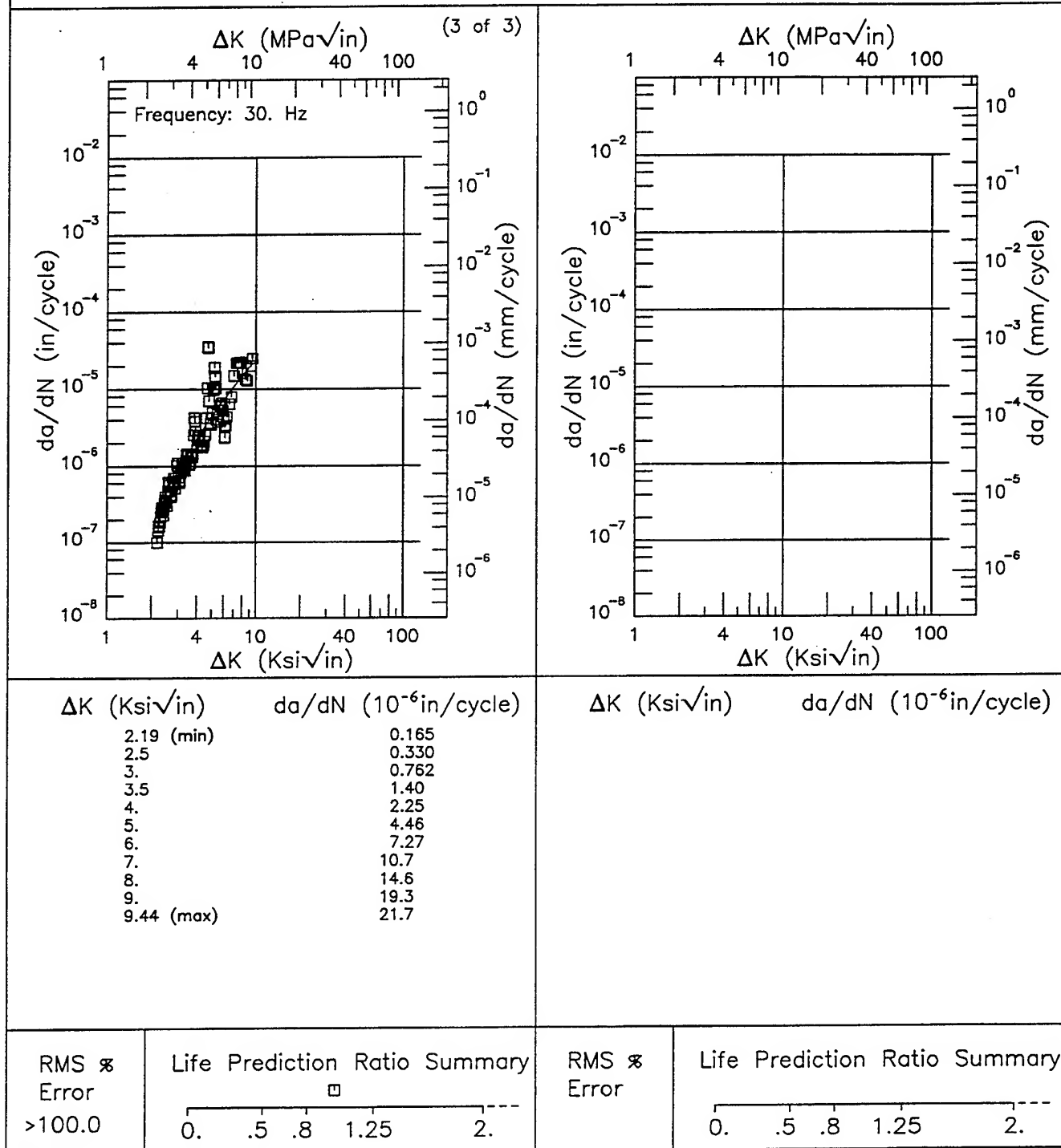


Figure 7.18.3.1.1 (Concluded)

R

AL905XL

Condition/Ht:
 Form: Forging
 Specimen Type: CT
 Orientation: L-T
 Frequency: 10 Hz
 Environment: LAB AIR; RT

Yield Strength: 60.1 ksi
 Ult. Strength: 73.7 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 1.5 in.
 Ref: WL002

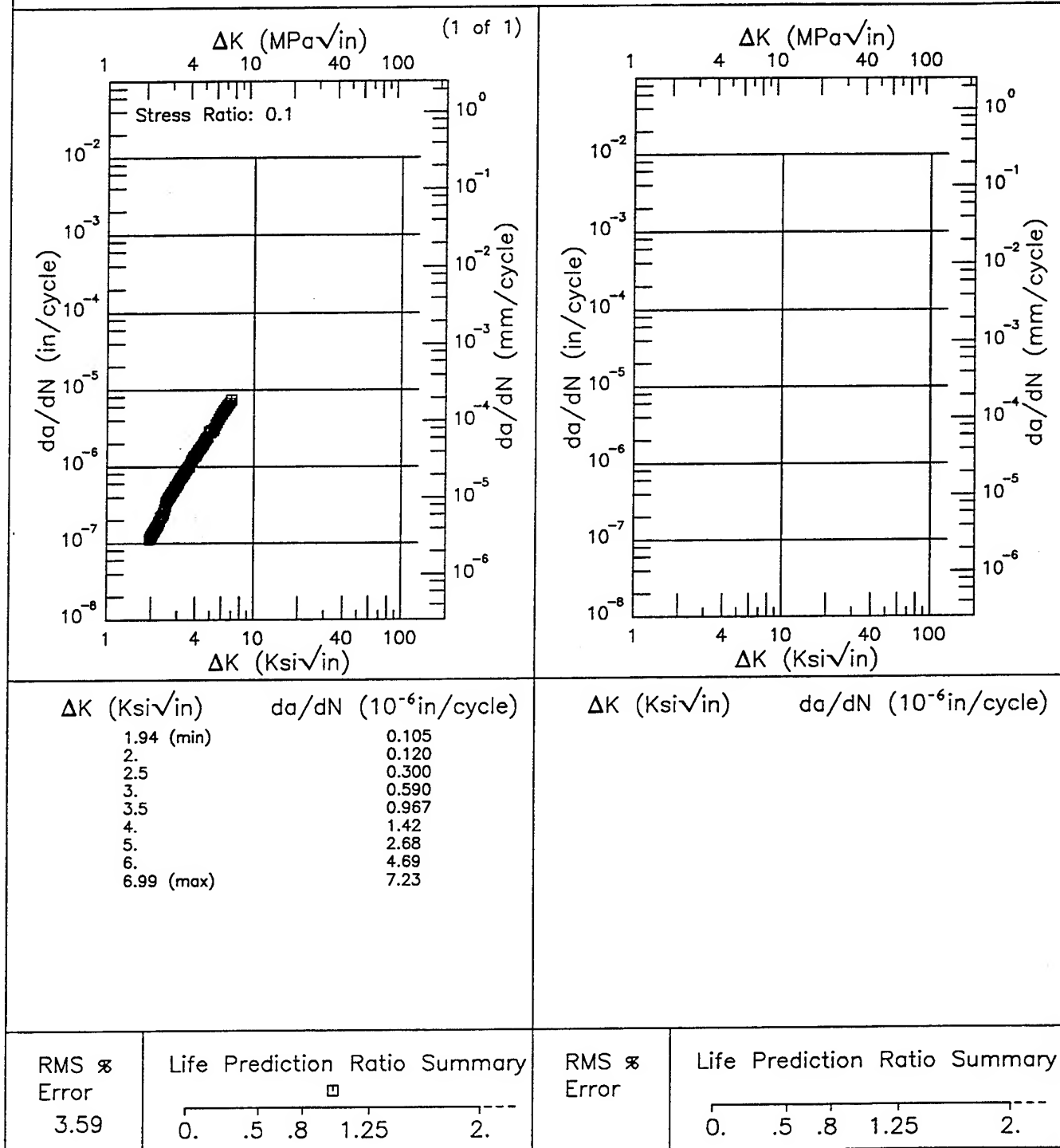


Figure 7.18.3.1.2

AL905XL

F

Condition/Ht:
 Form: Forging
 Specimen Type: CT
 Orientation: T-L
 Stress Ratio: 0.1
 Environment: LAB AIR; RT

Yield Strength: 66 – 70.1 ksi
 Ult. Strength: 75.2 – 77.7 ksi
 Specimen Thk: 0.249 – 0.251 in.
 Specimen Width: 1.598 – 1.602 in.
 Ref: WL002

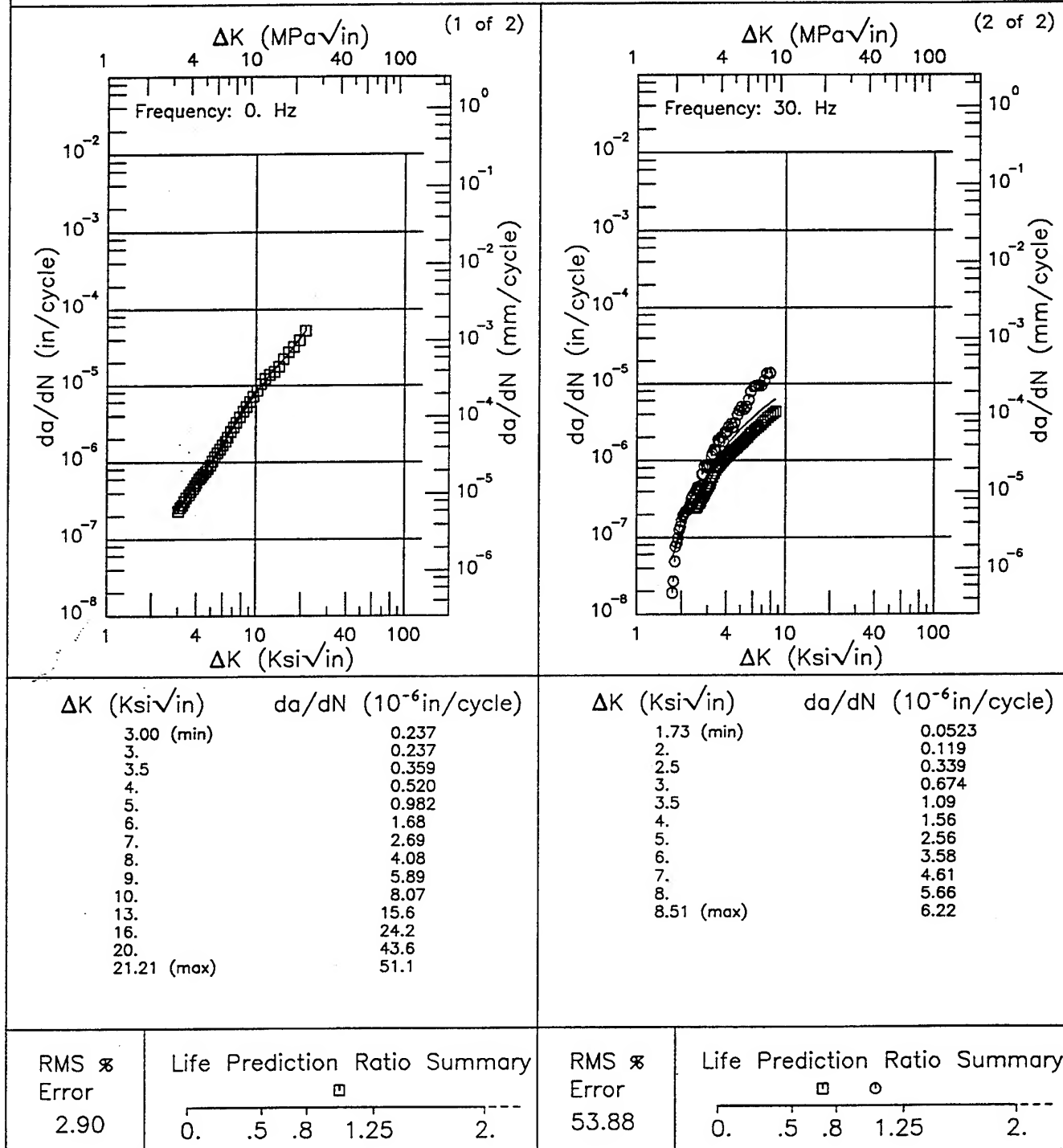
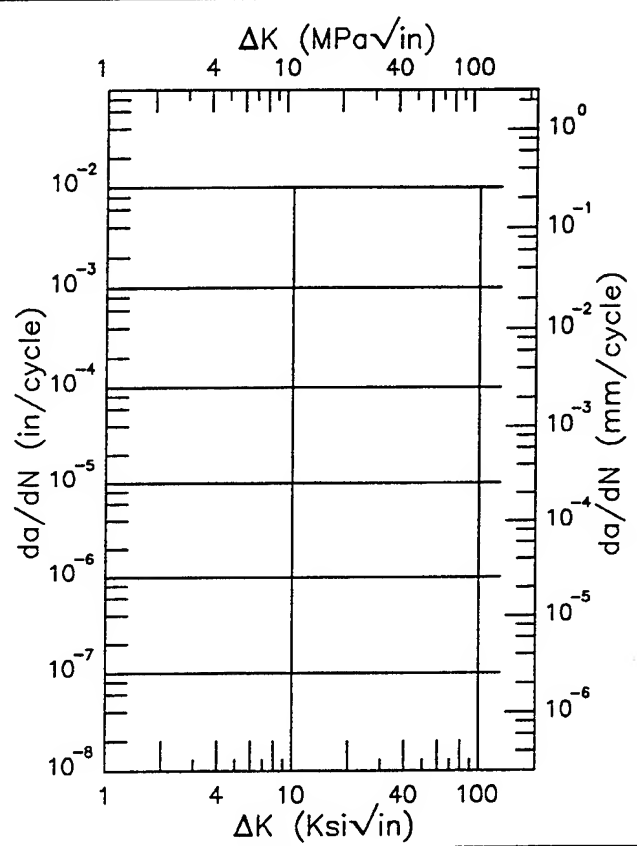
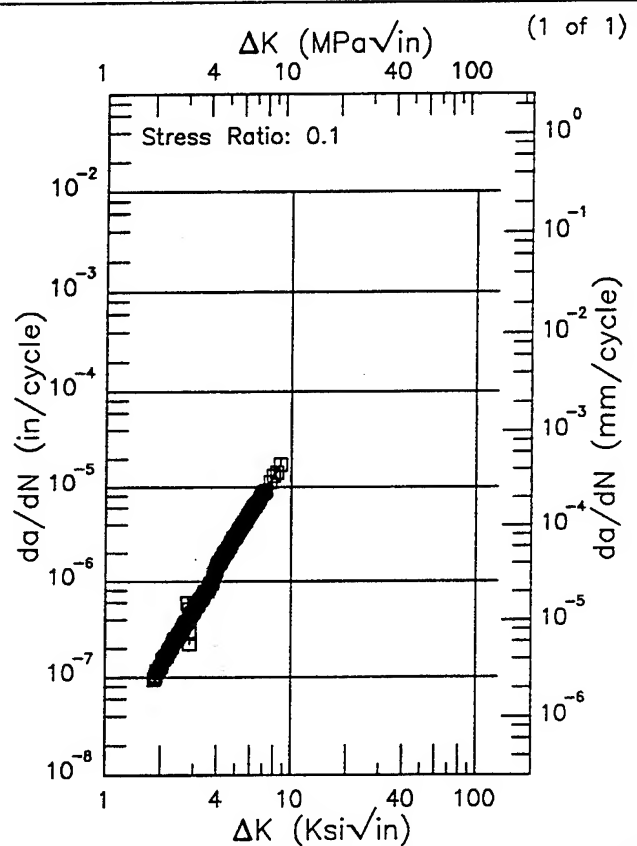


Figure 7.18.3.1.3

R AL905XL

Condition/Ht:
 Form: Forging
 Specimen Type: CT
 Orientation: T-L
 Frequency: 10 Hz
 Environment: LAB AIR; RT

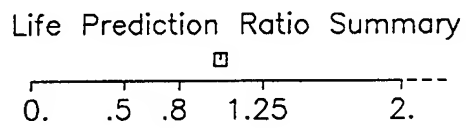
Yield Strength: 66.9 ksi
 Ult. Strength: 76.1 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 1.5 in.
 Ref: WL002



ΔK (Ksi√in)	da/dN (10^{-6} in/cycle)
1.84 (min)	0.0968
2.	0.132
2.5	0.277
3.	0.488
3.5	0.813
4.	1.33
5.	3.05
6.	5.35
7.	8.32
8.	12.8
8.69 (max)	16.8

ΔK (Ksi√in) da/dN (10^{-6} in/cycle)

RMS %
 Error
 7.07



RMS %
 Error

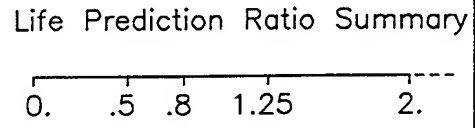


Figure 7.18.3.1.4

AL905XL

R

Condition/Ht:
 Form: Forging
 Specimen Type: CT
 Orientation: T-L
 Frequency:
 Environment: LAB AIR; RT

Yield Strength: 66 ksi
 Ult. Strength: 75.2 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 1.6 in.
 Ref: WL002

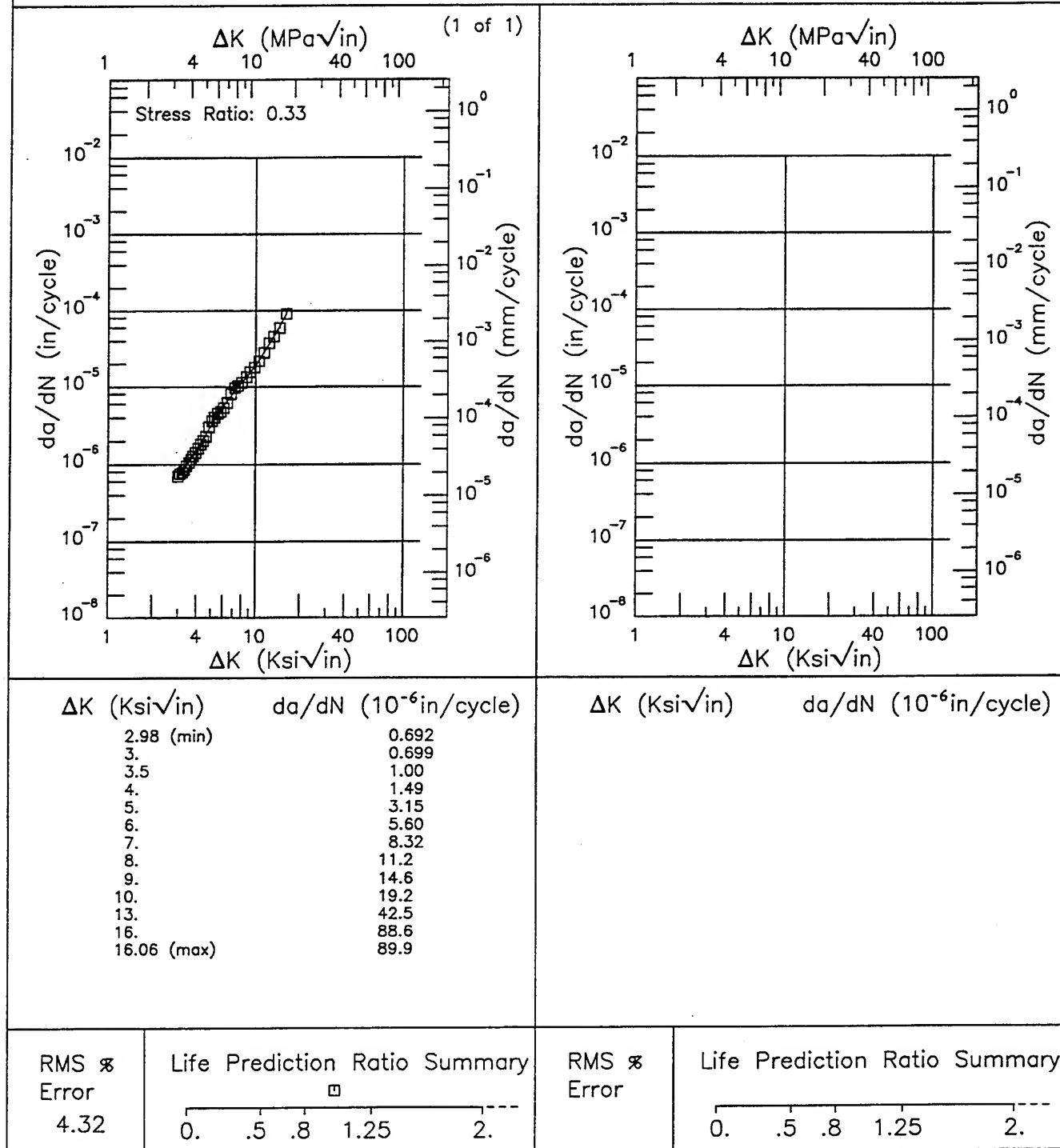
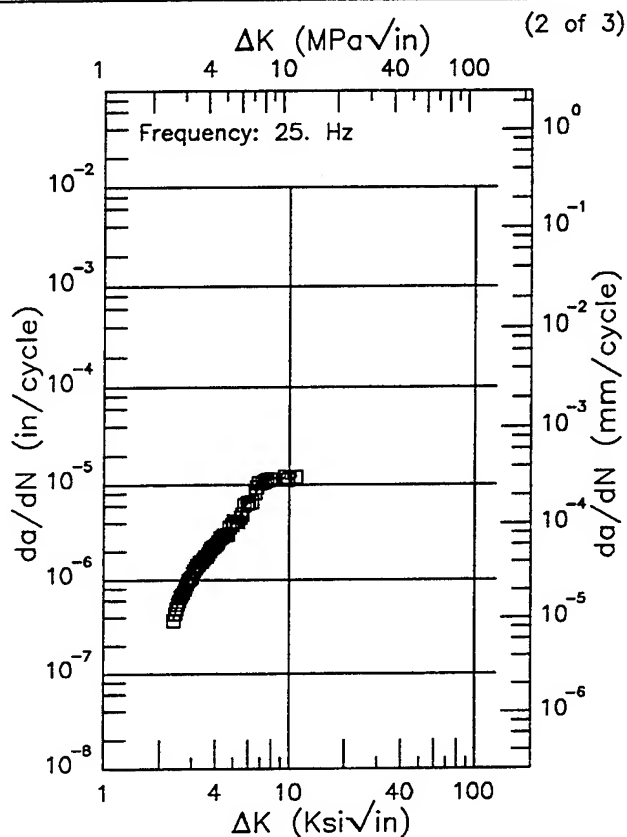
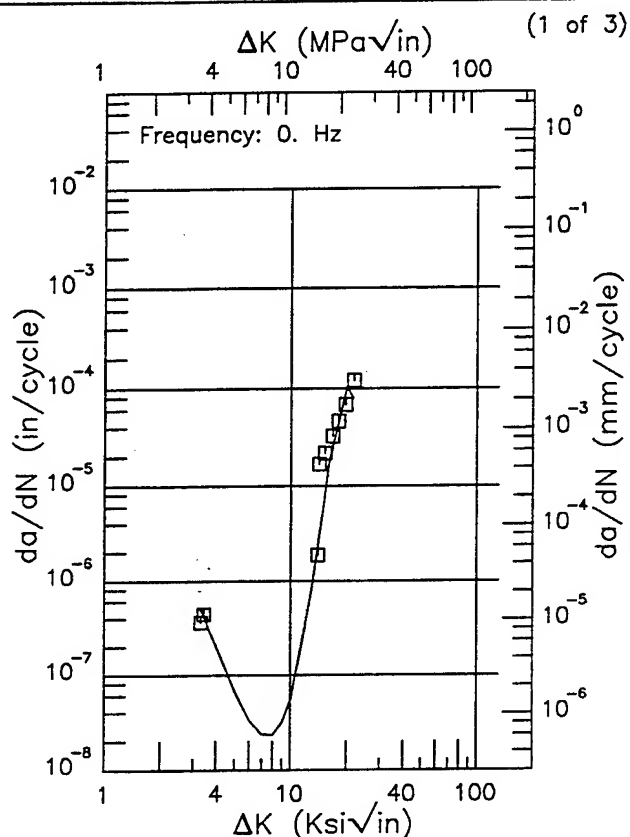


Figure 7.18.3.1.5

F AL905XL

Condition/Ht:
Form: Forging
Specimen Type: CT
Orientation: S-T
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 59.2 - 59.7 ksi
Ult. Strength: 71.2 - 72.5 ksi
Specimen Thk: 0.25 - 0.251 in.
Specimen Width: 1.598 - 1.602 in.
Ref: WL002



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
3.28 (min)	0.516
3.5	0.392
4.	0.206
5.	0.0683
6.	0.0330
7.	0.0234
8.	0.0234
9.	0.0313
10.	0.0534
13.	0.794
16.	17.3
20.	104.
21.66 (max)	79.3

ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
2.38 (min)	0.388
2.5	0.519
3.	1.14
3.5	1.72
4.	2.27
5.	3.86
6.	6.48
7.	9.46
8.	11.6
9.	11.8
10.	11.2
10.77 (max)	11.8

RMS %
Error
>100.0

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
Error
4.62

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

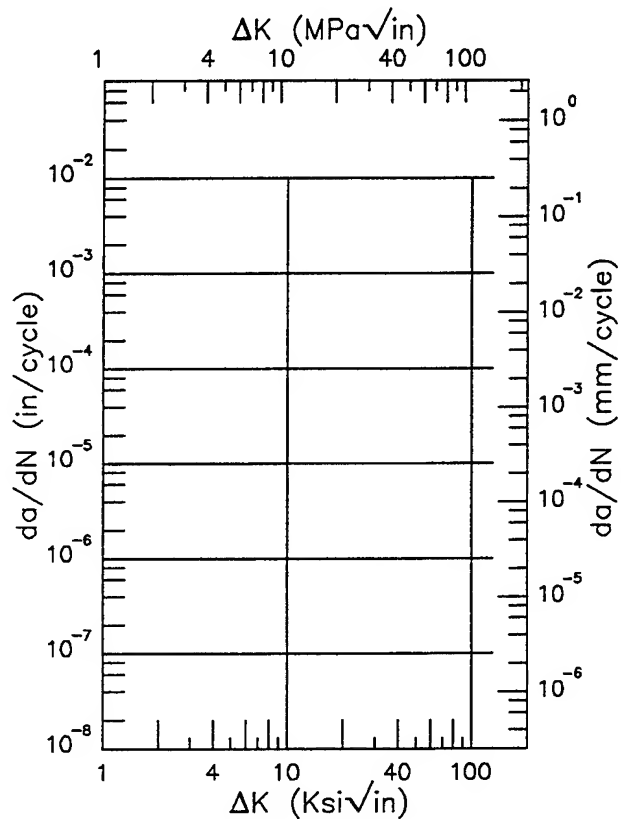
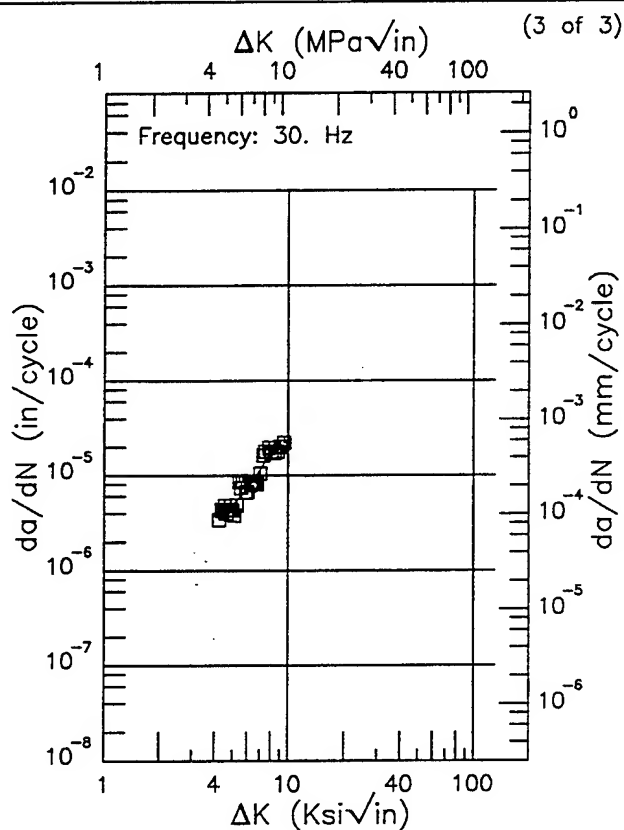
Figure 7.18.3.1.6

AL905XL

F

Condition/Ht:
 Form: Forging
 Specimen Type: CT
 Orientation: S-T
 Stress Ratio: 0.1
 Environment: LAB AIR; RT

Yield Strength: 59.2 - 59.7 ksi
 Ult. Strength: 71.2 - 72.5 ksi
 Specimen Thk: 0.25 - 0.251 in.
 Specimen Width: 1.598 - 1.602 in.
 Ref: WL002



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
4.22 (min)	3.74
5.	4.86
6.	7.22
7.	11.4
8.	17.2
9.	20.3
9.49 (max)	19.3

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10⁻⁶in/cycle)

RMS %
 Error
 16.99

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS %
 Error

Life Prediction Ratio Summary

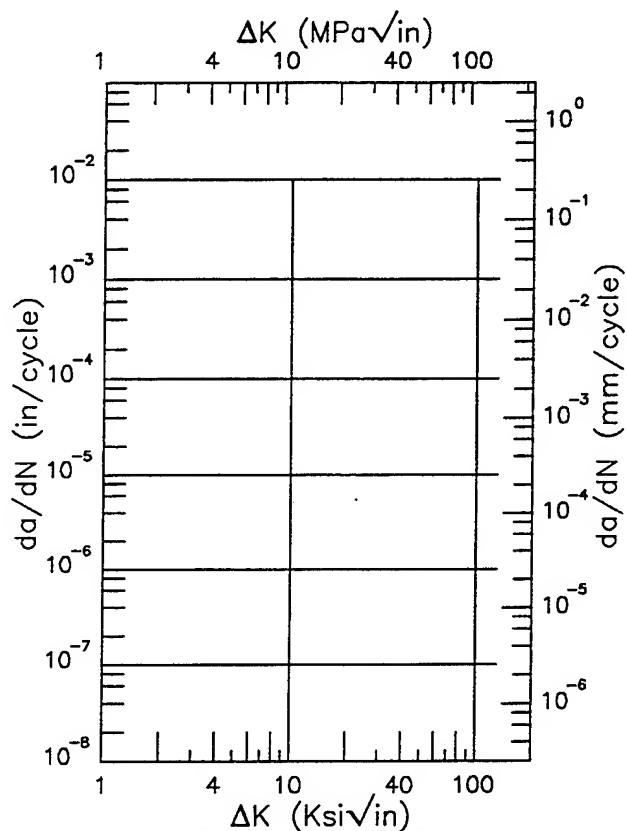
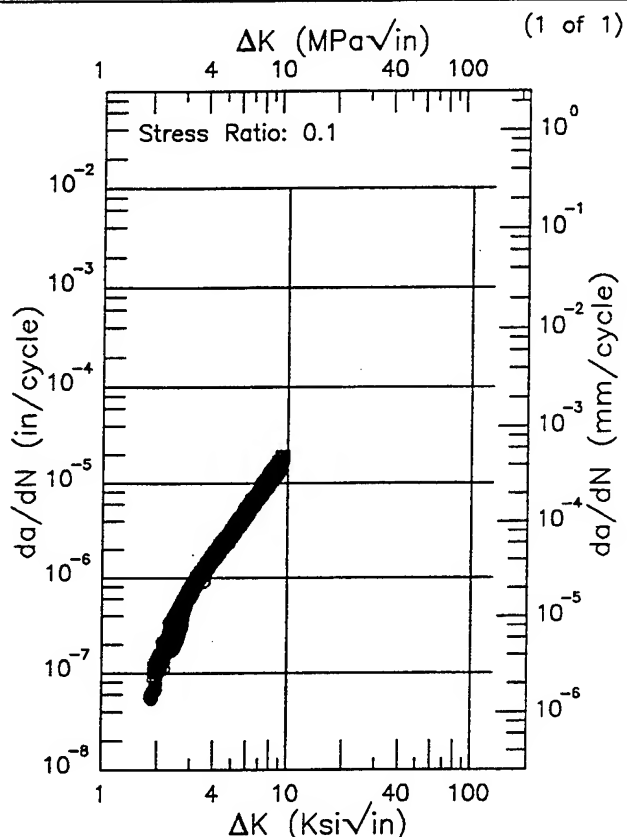
0. .5 .8 1.25 2.

Figure 7.18.3.1.6 (Concluded)

R AL905XL

Condition/Ht:
Form: Forging
Specimen Type: CT
Orientation: S-T
Frequency: 10 Hz
Environment: LAB AIR; RT

Yield Strength: 58.3 ksi
Ult. Strength: 71.7 ksi
Specimen Thk: 0.25 in.
Specimen Width: 1.5 in.
Ref: WL002

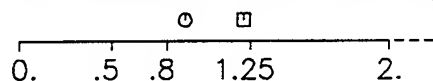


ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
1.84 (min)	0.0605
2.	0.101
2.5	0.313
3.	0.650
3.5	1.09
4.	1.62
5.	2.96
6.	4.80
7.	7.35
8.	10.7
9.	15.1
9.37 (max)	17.0

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10⁻⁶in/cycle)

RMS %
Error
14.37

Life Prediction Ratio Summary



RMS %
Error

Life Prediction Ratio Summary

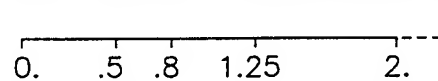


Figure 7.18.3.1.7

AL905XL

R

Condition/Ht:
 Form: Forging
 Specimen Type: CT
 Orientation: S-T
 Frequency:
 Environment: LAB AIR; RT

Yield Strength: 59.7 ksi
 Ult. Strength: 71.2 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 1.6 in.
 Ref: WL002

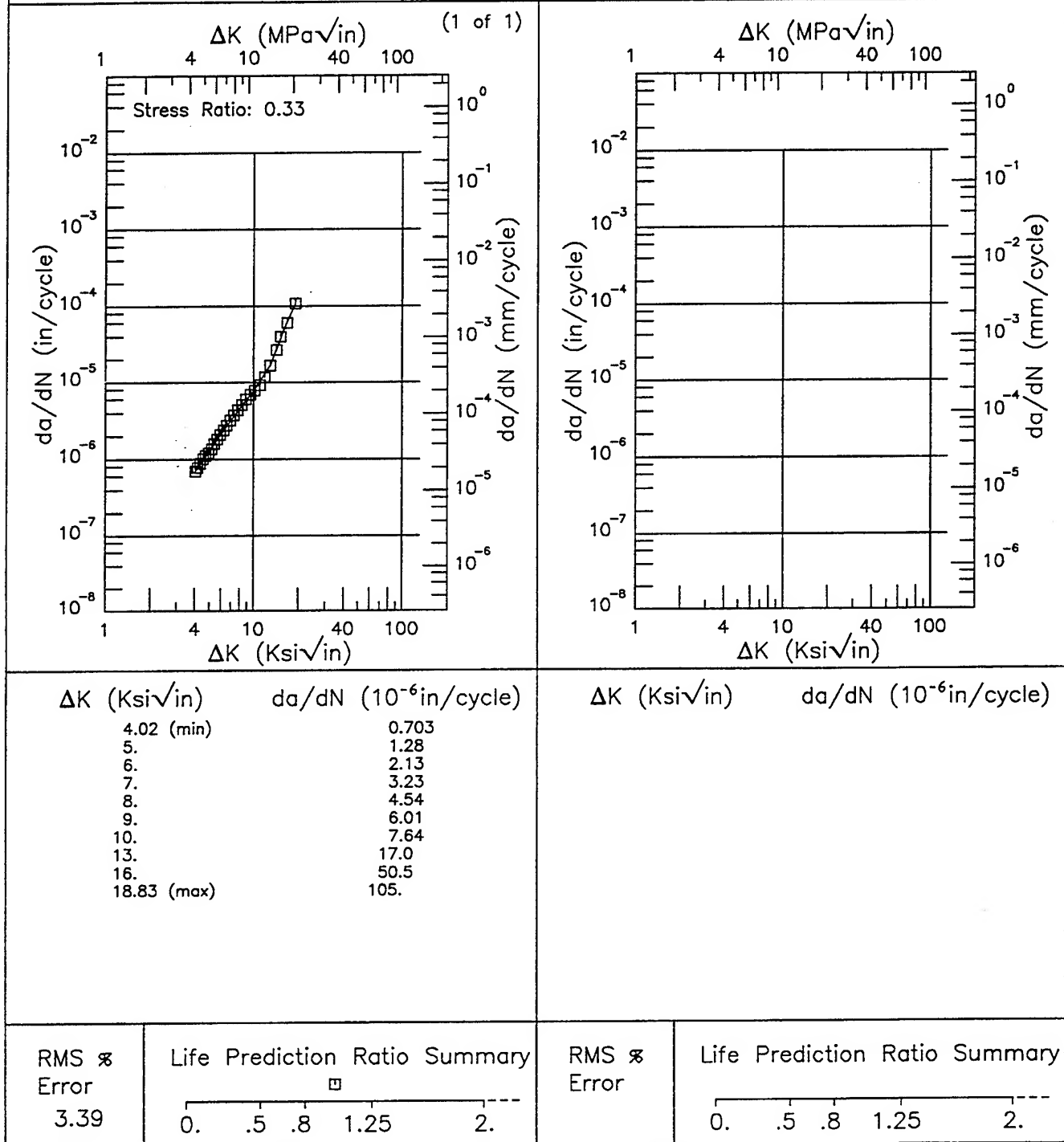


Figure 7.18.3.1.8

TABLE 7.19.1.2.1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
IN905XL AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level ($K\sqrt{in}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
				0.24	1.98	13.07			
Unspecified	FORGING	0.1							

TABLE 7.19.1.2.2

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
IN905XL AT ROOM TEMPERATURE**

ORIENTATION: L-T

ENVIRONMENT: Lab Air

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (Ksi $\sqrt{\text{in}}$)					
				2.5	5.0	10.0	20.0	50.0	100.0
850F 2HRS; 665F 2HRS; WARM H2O Q; 230F 24HRS	FORGING	0.1	3				82.03		
		0.1	3			11.9			
Unspecified	FORGING	0.02	1-15		3.54	22	268.45		
		0.02	1-20	0.32	1.33	11.21			

TABLE 7.19.1.2.3

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
IN905XL AT ROOM TEMPERATURE**

ORIENTATION: T-L		ENVIRONMENT: H.H.A.									
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)							
				ΔK Level (Ksi $\sqrt{\text{in}}$)							
				2.5	5.0	10.0	20.0	50.0	100.0		
Unspecified	FORGING	0.1		0.25	1.63						

TABLE 7.19.1.2.4

1 of 1

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
IN905XL AT ROOM TEMPERATURE**

ORIENTATION: T-L		ENVIRONMENT: Lab Air							
CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)					
				ΔK Level (K_{SI}/\sqrt{in})					
				2.5	5.0	10.0	20.0	50.0	100.0
850F 2HRS; 665F 2HRS; WARM H20 Q; 230F 24HRS	FORGING	0.1	6		3.69				
		0.1	6			17.71	171.44		
		0.02	0.1-20		18.92				
Unspecified	FORGING	0.02	0.1-25	1.24					
				0.07	1.68	14.82	149.84		

TABLE 7.19.1.2.5

**FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
IN905XL AT ROOM TEMPERATURE**

ORIENTATION: S-L

ENVIRONMENT: H.H.A.

CONDITION/ HEAT TREATMENT	PRODUCT FORM	R	FREQ (Hz)	FCGR (10^{-6} in/cycle)				
				ΔK Level (K_{SI}/\sqrt{in})				
				2.6	5.0	10.0	20.0	50.0
Unspecified	FORGING	0.1			0.76	13.61	87.78	100.0

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R

IN905XL

Condition/Ht: 850F 2HRS; 665F 2HRS; WARM H2O Q; 230F 24HRS

Form: Forging

Specimen Type: CT

Orientation: L-T

Frequency: 3 Hz

Environment: LAB AIR; RT

Yield Strength: 57.7 ksi

Ult. Strength: 69.6 ksi

Specimen Thk: 0.444 in.

Specimen Width: 2.553 in.

Ref: WL002

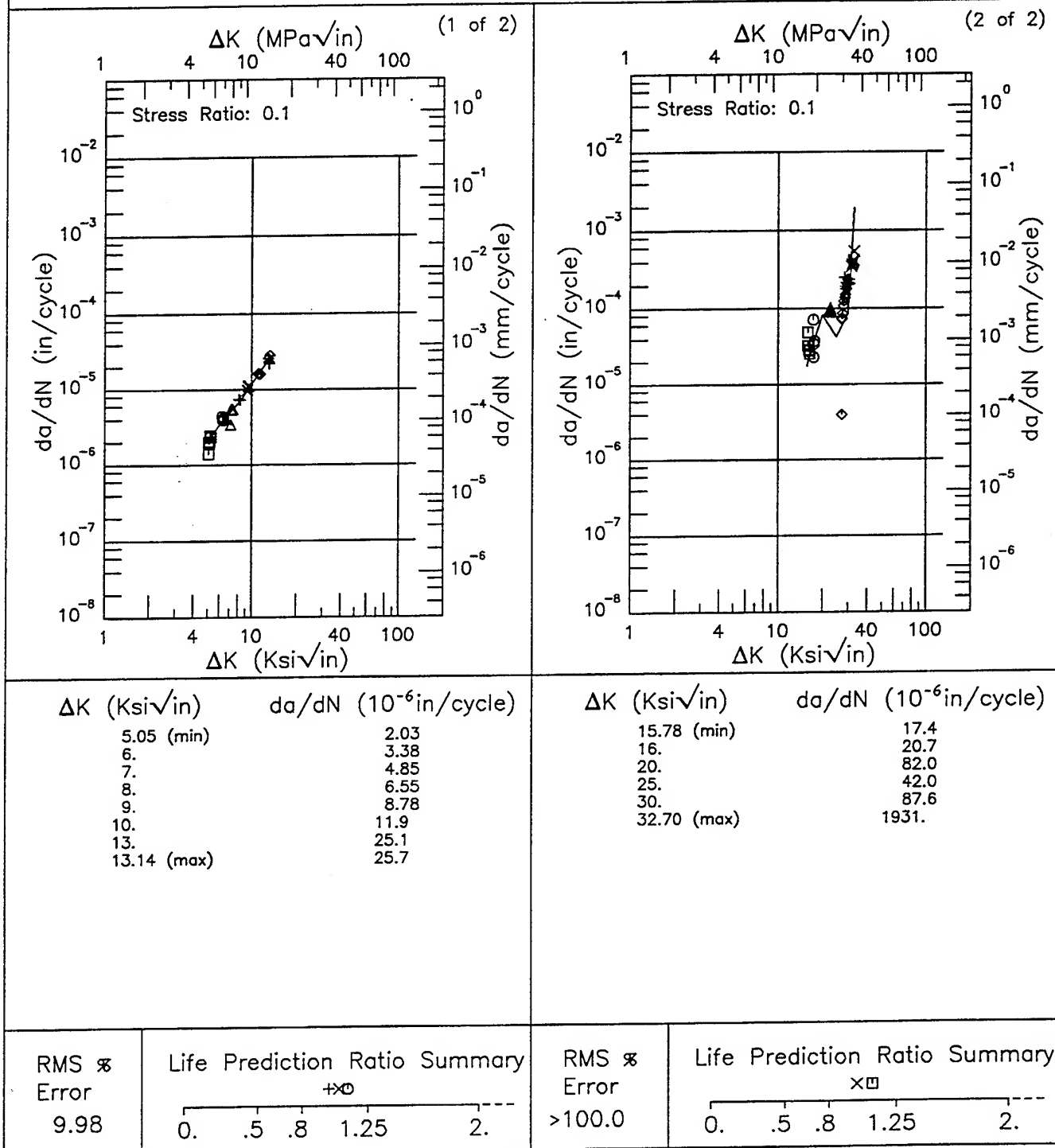


Figure 7.19.3.1.1

IN905XL R

Condition/Ht: 850F 2HRS; 665F 2HRS; WARM H2O Q; 230F 24HRS

Form: Forging

Specimen Type: CT

Orientation: T-L

Frequency: 6 Hz

Environment: LAB AIR; RT

Yield Strength: 58.4 ksi

Ult. Strength: 68.4 ksi

Specimen Thk: 0.444 in.

Specimen Width: 2.566 in.

Ref: WL002

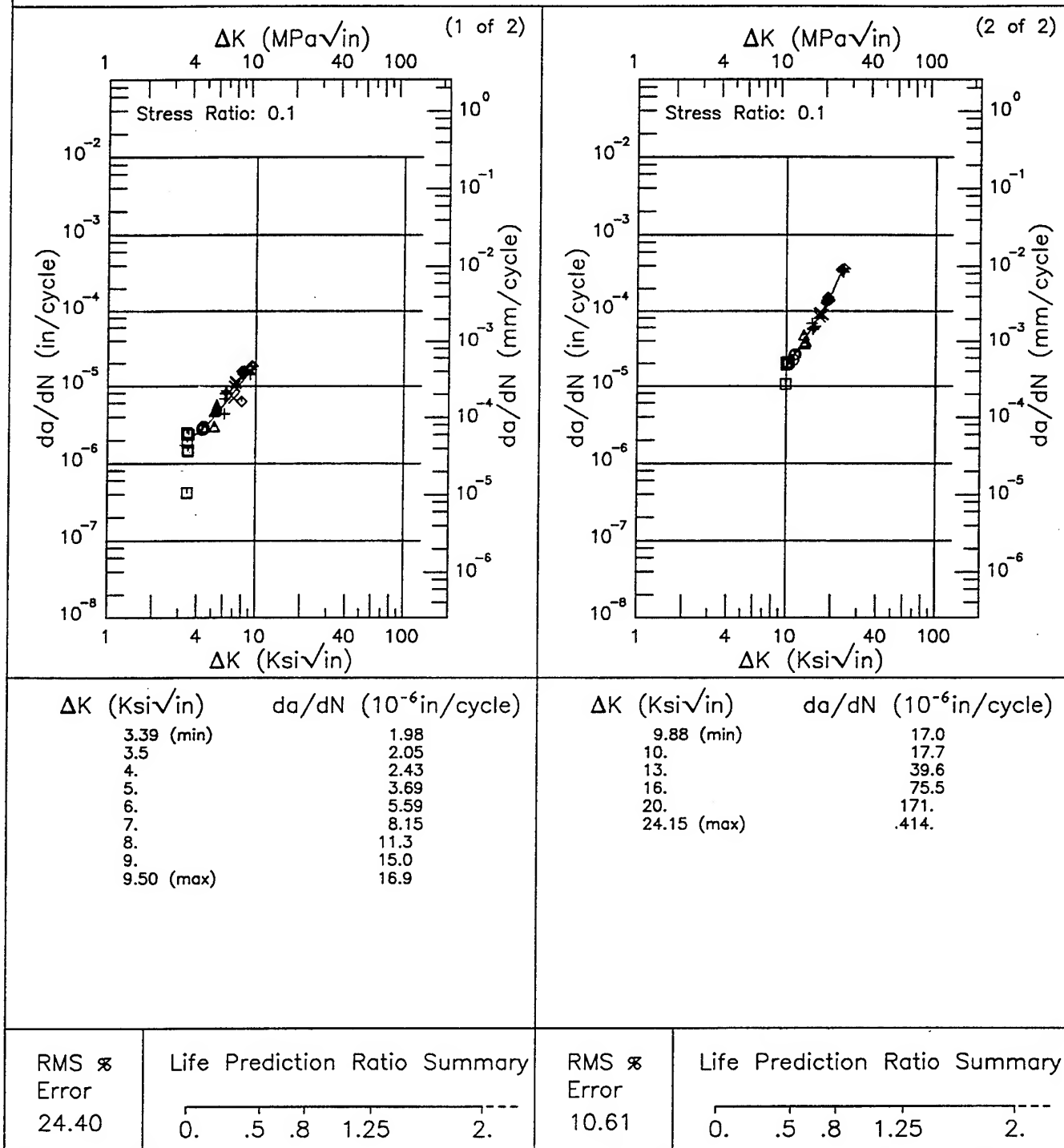


Figure 7.19.3.1.2

R IN905XL

Condition/Ht:
Form: Forging
Specimen Type: CT
Orientation: L-T
Frequency:
Environment: H.H.A.; RT

Yield Strength: 55.5 – 55.7 ksi
Ult. Strength: 65.6 ksi
Specimen Thk: 0.248 – 0.25 in.
Specimen Width: 1.495 – 1.497 in.
Ref: WL002

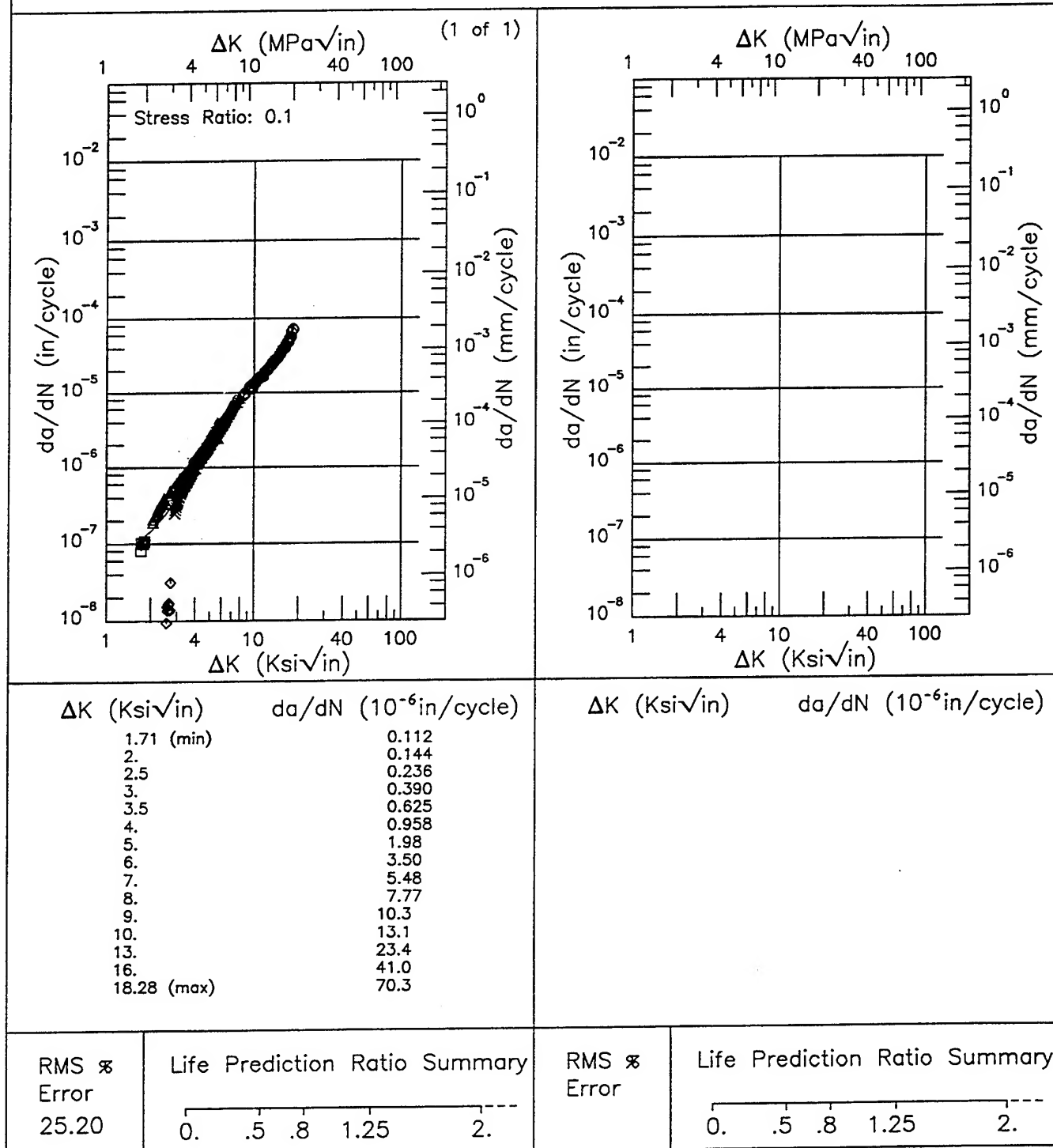


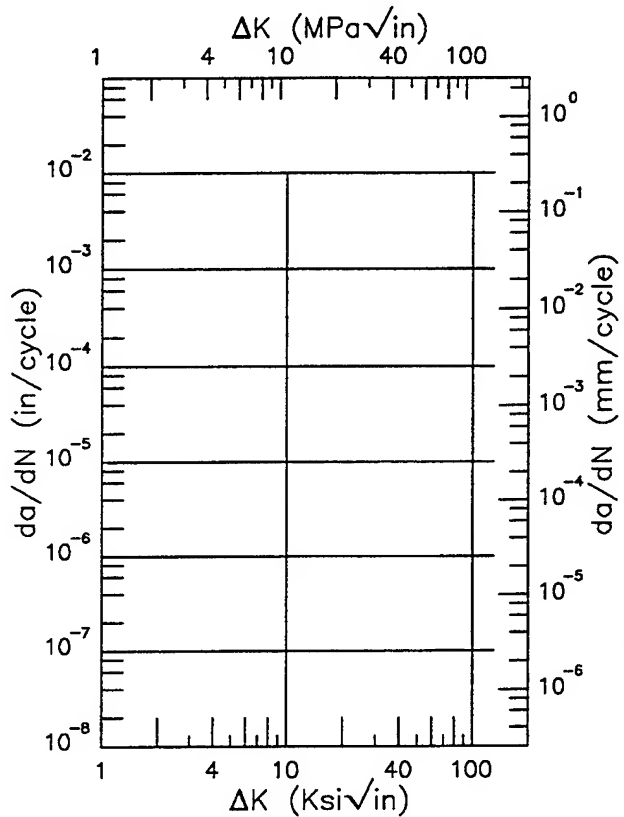
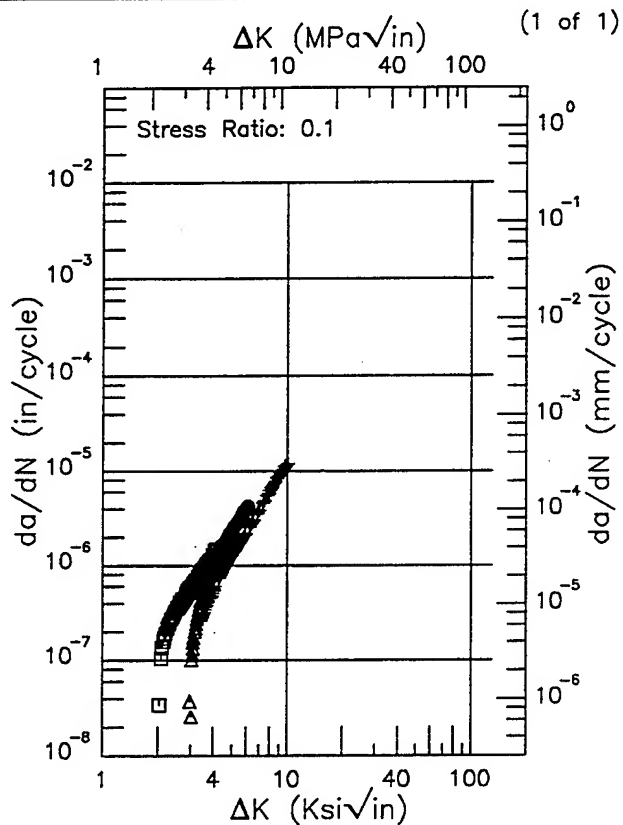
Figure 7.19.3.1.3

IN905XL

R

Condition/Ht:
 Form: Forging
 Specimen Type: CT
 Orientation: T-L
 Frequency:
 Environment: H.H.A.; RT

Yield Strength: 54.3 – 54.6 ksi
 Ult. Strength: 65.7 ksi
 Specimen Thk: 0.25 in.
 Specimen Width: 1.493 – 1.497 in.
 Ref: WL002



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10 ⁻⁶ in/cycle)
2.02 (min)	0.138
2.5	0.252
3.	0.407
3.5	0.604
4.	0.849
5.	1.53
6.	2.56
7.	4.09
8.	6.21
9.	8.92
9.97 (max)	12.1

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10⁻⁶in/cycle)

RMS %
 Error
 34.82

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

RMS %
 Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.---

Figure 7.19.3.1.4

R

Condition/Ht:
Form: Forging
Specimen Type: CT
Orientation: S-L
Frequency:
Environment: H.H.A.; RT

Yield Strength: 51 - 51.4 ksi
Ult. Strength:
Specimen Thk: 0.248 - 0.249 in.
Specimen Width: 1.496 - 1.498 in.
Ref: WL002

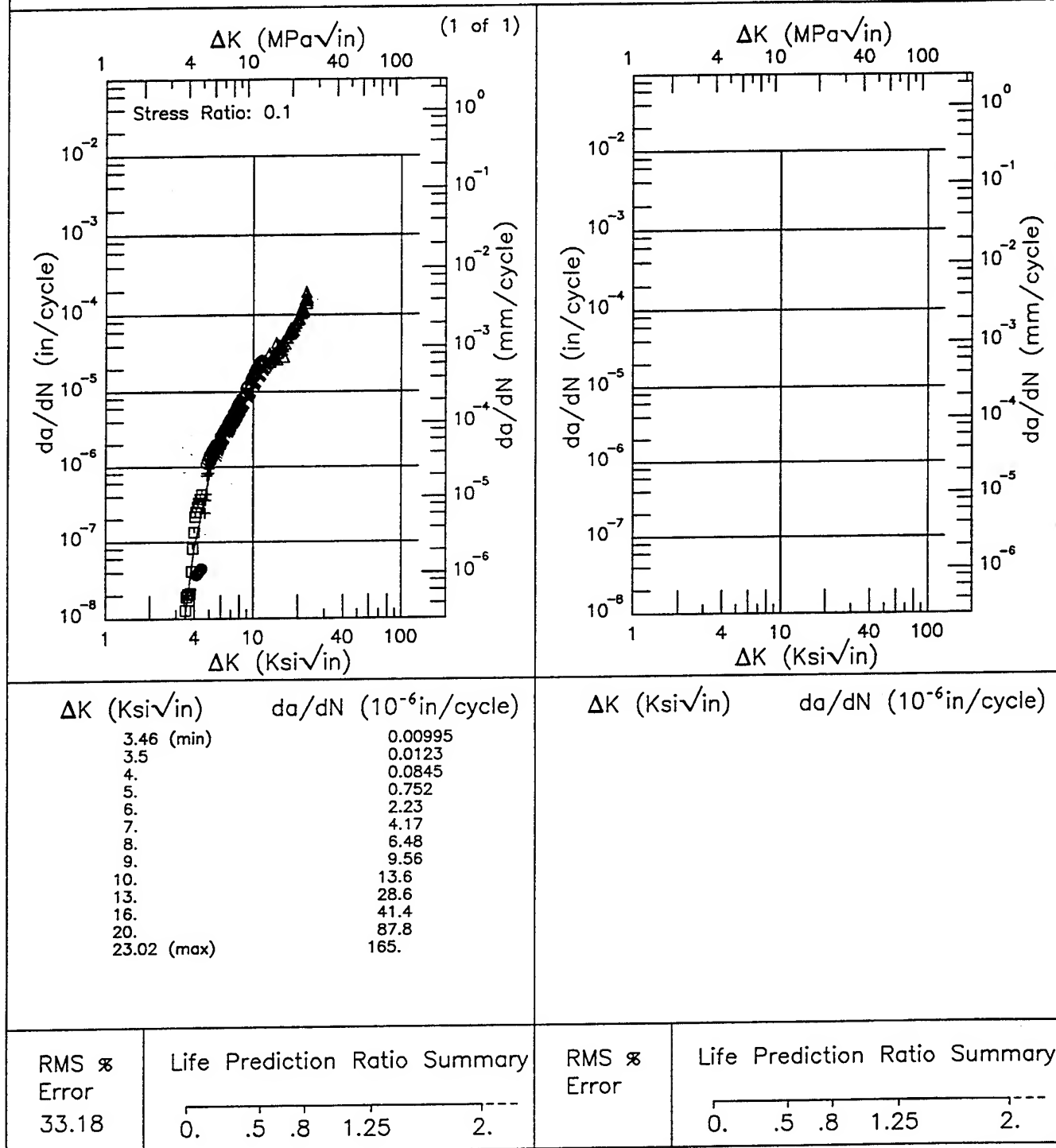


Figure 7.19.3.1.5

Condition/Ht:
 Form: Forging
 Specimen Type: WOL
 Orientation: L-T
 Frequency: 1 - 15 Hz
 Environment: LAB AIR; RT

Yield Strength: 63.8 ksi
 Ult. Strength: 75 ksi
 Specimen Thk: 0.249 in.
 Specimen Width: 1.642 in.
 Ref: WL002

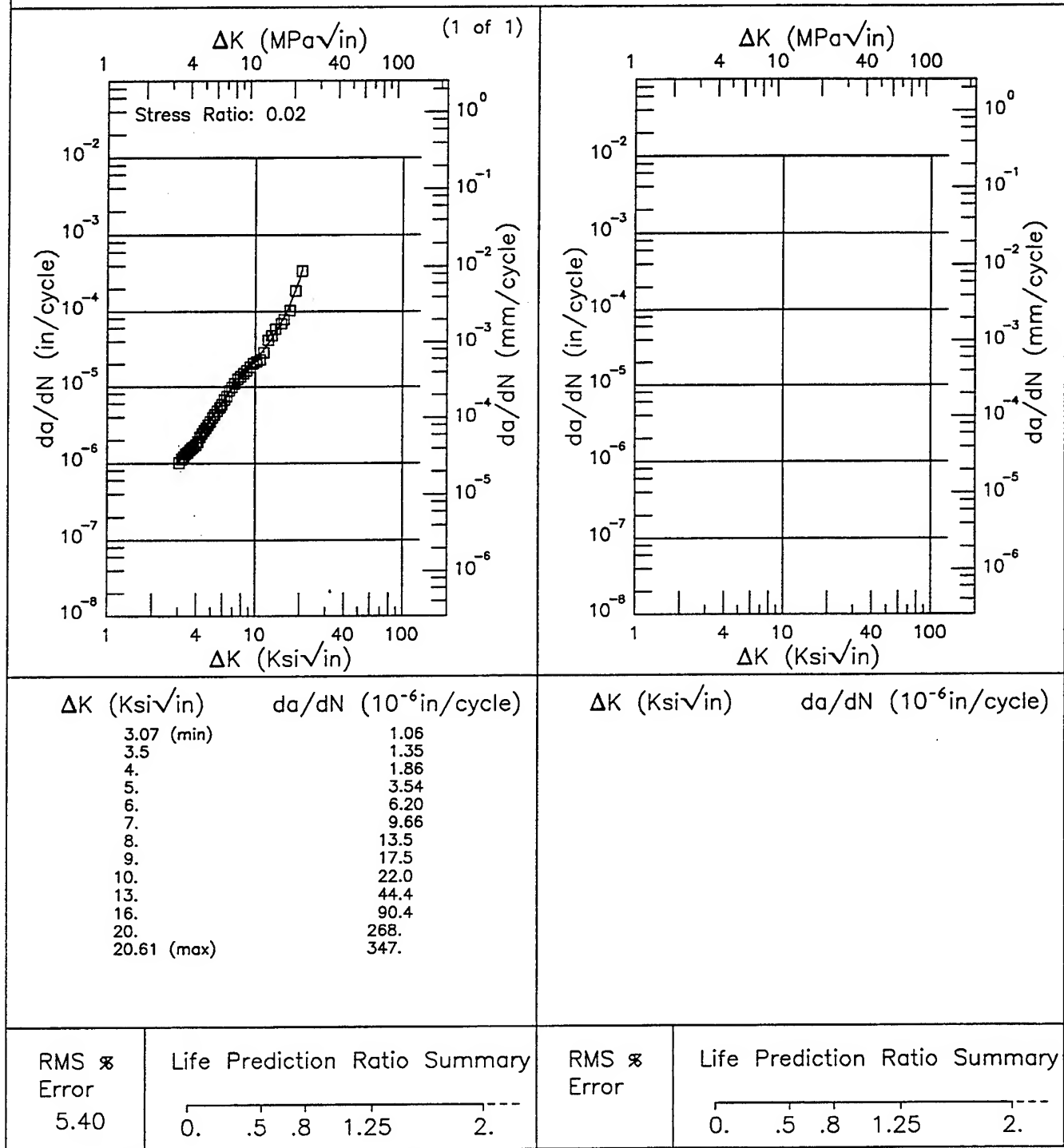
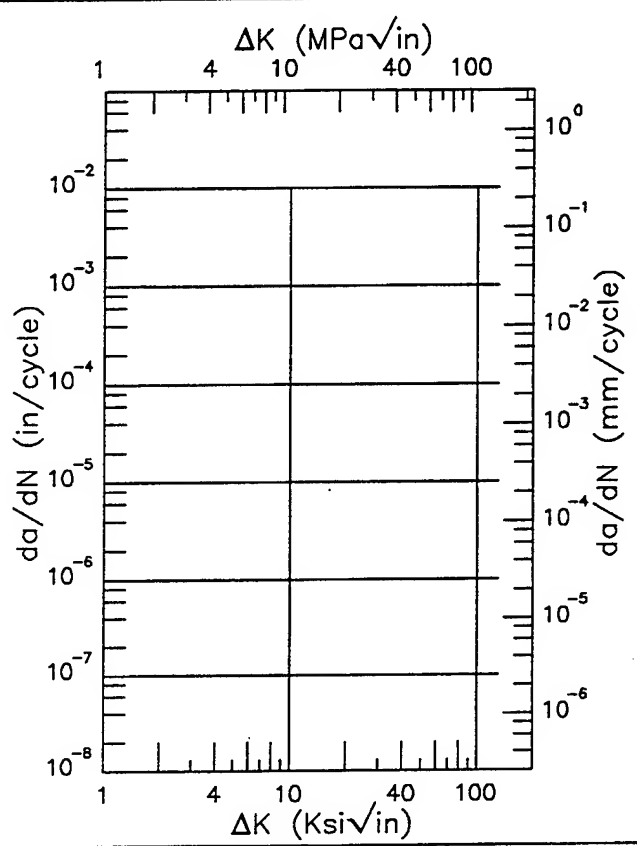
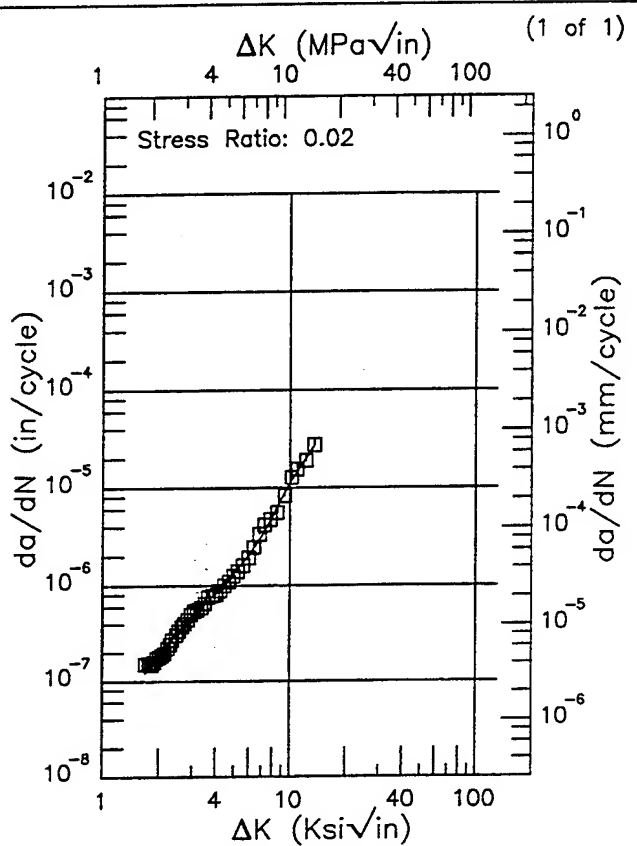


Figure 7.19.3.1.6

R IN905XL

Condition/Ht:
 Form: Forging
 Specimen Type: WOL
 Orientation: L-T
 Frequency: 1 - 20 Hz
 Environment: LAB AIR; RT

Yield Strength: 63.8 ksi
 Ult. Strength: 75 ksi
 Specimen Thk: 0.251 in.
 Specimen Width: 1.6 in.
 Ref: WL002



ΔK (Ksi√in)	da/dN (10 ⁻⁶ in/cycle)
1.70 (min)	0.122
2.	0.189
2.5	0.318
3.	0.465
3.5	0.633
4.	0.826
5.	1.33
6.	2.07
7.	3.22
8.	5.04
9.	7.75
10.	11.2
13.	23.8
13.53 (max)	27.0

ΔK (Ksi√in) da/dN (10⁻⁶in/cycle)

RMS % Error	Life Prediction Ratio Summary
7.38	0. .5 .8 1.25 2.---

RMS % Error	Life Prediction Ratio Summary
	0. .5 .8 1.25 2.---

Figure 7.19.3.1.7

Condition/Ht:
Form: Forging
Specimen Type: WOL
Orientation: T-L
Frequency: 0.1 - 20 Hz
Environment: LAB AIR; RT

Yield Strength: 64 ksi
Ult. Strength: 74.5 ksi
Specimen Thk: 0.248 in.
Specimen Width: 1.998 in.
Ref: WL002

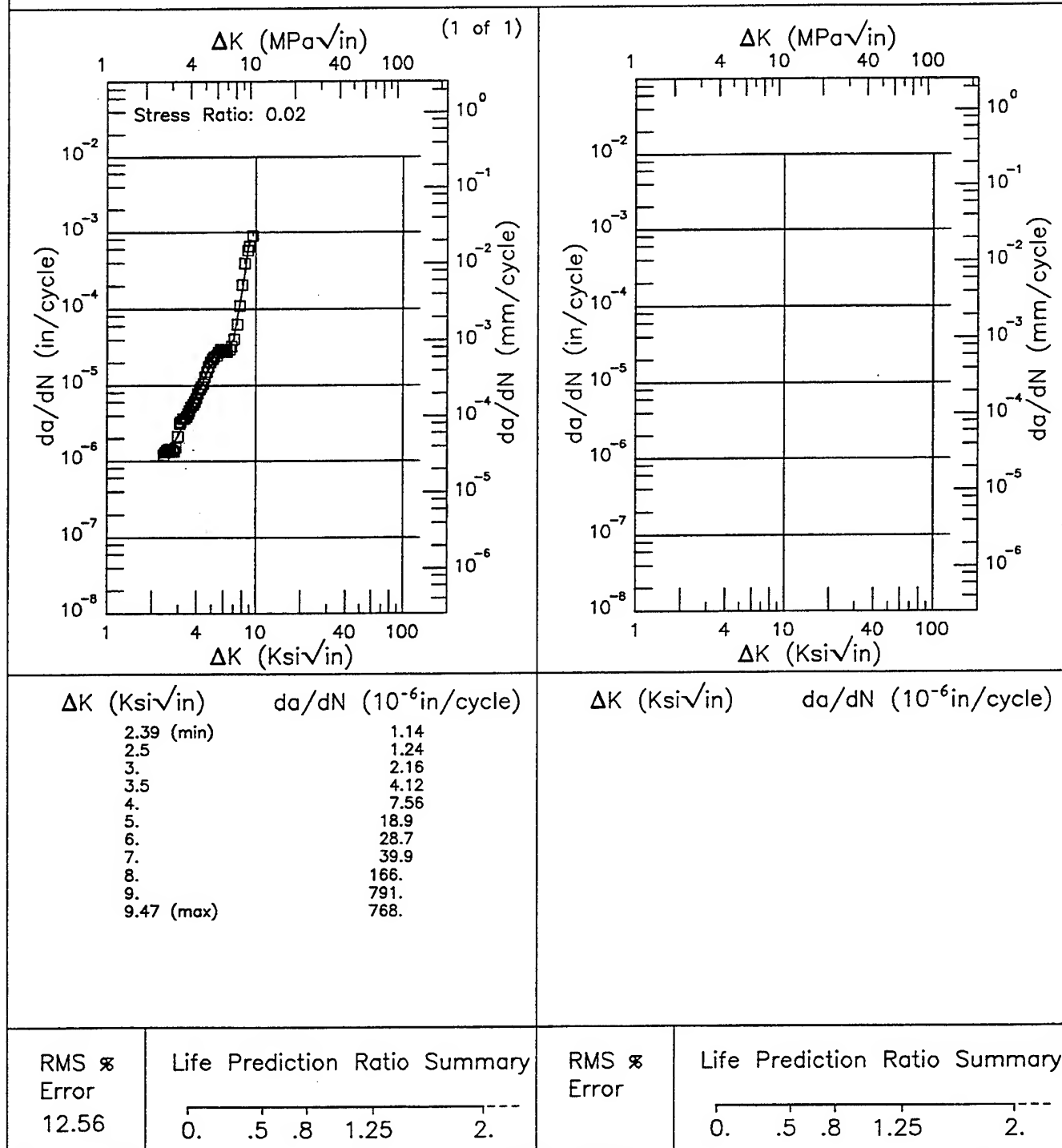
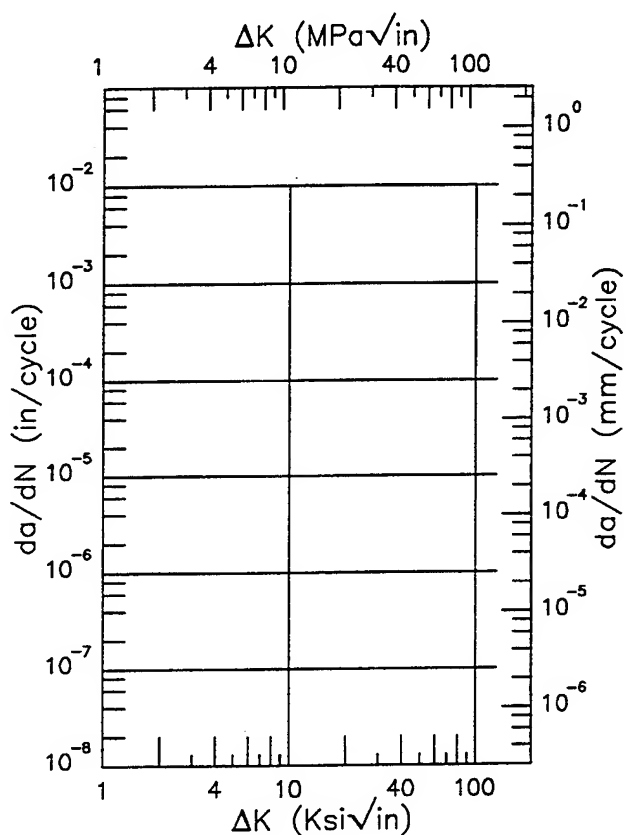
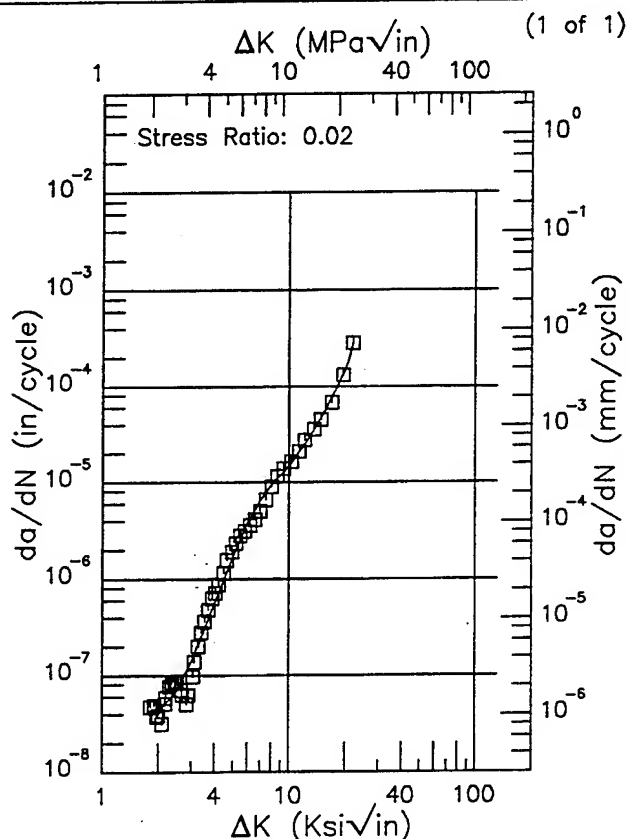


Figure 7.19.3.1.8

R IN905XL

Condition/Ht:
Form: Forging
Specimen Type: WOL
Orientation: T-L
Frequency: 0.1 - 25 Hz
Environment: LAB AIR; RT

Yield Strength: 64 ksi
Ult. Strength: 74.5 ksi
Specimen Thk: 0.251 in.
Specimen Width: 1.6 in.
Ref: WL002



ΔK (Ksi $\sqrt{\text{in}}$)	da/dN (10^{-6} in/cycle)
1.81 (min)	0.0391
2.	0.0416
2.5	0.0688
3.	0.138
3.5	0.282
4.	0.551
5.	1.68
6.	3.79
7.	6.53
8.	9.25
9.	11.9
10.	14.8
13.	30.1
16.	62.6
20.	150.
21.84 (max)	286.

ΔK (Ksi $\sqrt{\text{in}}$) da/dN (10^{-6} in/cycle)

RMS %
Error
22.21

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS %
Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

Figure 7.19.3.1.9

TABLE 7.20

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

51527	2014	K_{Ic}	Christian, J. L., and Hurlich, A., "Physical and Mechanical Properties of Pressure Vessel Materials for Application in a Cryogenic Environment," ASD-TDR-62-258, Part II, General Dynamics/Astronautics (April 1963).
62306	2219	K_{Ic}	Eichenberger, T. W., "Fracture Resistance Data Summary," Report DA-20947, The Boeing Company (June 1962).
62308	2024 2024 (ALCLAD)	K_{Ic} K_{Ic}	Anderson, W. E., "Fracture Toughness Data Summary," Report D6-9068, The Boeing Company (June 1962).
62311	2024 (ALCLAD)	K_{Ic}	Gurin, P. J., "Crack Propagation Tests for Some Aluminum Alloy Materials," LR 10498, Lockheed Aircraft Corporation (February 1955).
66103	2219	K_{Ic}	Ferguson, C. W., "Hypervelocity Impact Effects on Liquid Hydrogen Tanks," NASA CR-54852, Douglas Aircraft Co., Inc. (March 1966).
67821	2024	K_{Ic}	Walker, E. K., "A Study of the Influence of Geometry on the Strength of Fatigue Cracked Panels," AFFDL-TR-66-92, Northrop Norair (June 1966).
68908	2014	K_{Ic}	Orange, T. W., "Fracture Toughness of Wide 2014-T6 Aluminum Sheet at -320 F," NASA TN D-4017, Lewis Research Center (June 1967).
69759	2219	K_{Ic}	Eitman, D. A., and Rawe, R. A., "Plane Stress Cyclic Flaw Growth of 2219-T87 Aluminum and 5Al-2.5Sn ELI Titanium Alloys at Room and Cryogenic Temperatures," NASA CR-54956, Douglas Aircraft Company, Inc. (September 1966).

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

70485	2024 (ALCLAD)	K_{Ic}	Broek, D., "The Effect of Finite Specimen Width on the Residual Strength of Light Alloy Sheet," TR M.2152, National Aero- and Astronautical Research Institute, Amsterdam (September 1965).
70519	2024 (ALCLAD)	K_{Ic}	Broek, D., "The Effect of Sheet Thickness on the Fracture Toughness of Cracked Sheet," NRL-TR M.2160, National Aerospace Laboratory, Amsterdam (January 1966).
77720	2014 2024	K_{Ic} K_{Ic} ; a-vs-N; da/dN	Brownhill, D. J., et al., "Mechanical Properties, Including Fracture Toughness and Fatigue, Corrosion Characteristics and Fatigue-Crack Propagation Rates of Stress-Relieved Aluminum Alloy Hand Forgings," Report AFML-TR-70-10, Aluminum Company of America, Alcoa Research Laboratory, New Kensington, PA, Contract F33615-68-C-1385 (February 1970).
78313	2014 2024 2219	da/dt da/dt; K_{Isc} da/dt	Hyatt, M. V., "Use of Precracked Specimens in Stress-Corrosion Testing of High-Strength Aluminum Alloys," Summary Report D6-24466, The Boeing Company, Renton, Wash., ARPA Contract N00014-66-C-0365 (November 1969).
78982	2024	K_{Ic}	Fedderson, C. E., Simonen, F. A., Hulbert, L. E., and Hyler, W. S., "An Experimental and Theoretical Investigation of Plane-Stress Fracture of 2024-T351 Aluminum Alloy," NASA CR-1678, Battelle Memorial Institute (September 1970).
80073	2021	K_{Ic} ; K_{Isc}	Schwartzberg, F. R., et al., "Cryogenic Alloy Screening," Report NASA CR-72733, Martin Marietta Corporation, Denver, CO, Contract NAS 3-11203 (November 1970).

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

80104	2219	K_{Ic}	Orange, T. W., Sullivan, T. L., and Calfo, F. D., "Fracture of Thin Sections Containing Through and Part-Through Cracks," NASA TN D-6305, Lewis Research Center (April 1971).
81507	6061	da/dN	Crooker, T. W., "Crack Propagation in Aluminum Alloys Under High-Amplitude Cyclic Load," Naval Research Laboratory, NRL Report 7286, Washington, D. C., 20390, July 12, 1971.
82675	2014 2024 6061	K_{Ic} ; K_{Isc} K_{Ic} ; K_{Isc} K_{Ic} ; K_{Isc}	Chu, H. P., and Wacker, G. A., "Fracture Toughness and Stress Corrosion Properties of Aluminum Alloy Hand Forgings," Journal of Materials, <u>7</u> (1) 95-99 (March 1972).
82878	2024	K_{Ic}	Pearson, S., "The Effect of Mean Stress on Fatigue Crack Propagation in Half-Inch (12.7 mm) Thick Specimens of Aluminum Alloys of High and Low Fracture Toughness," Engineering Fracture Mechanics, <u>4</u> (1) 9-24 (March 1972).
82879	2014	K_{Ic}	Moore, R. L., et al., "Fatigue and Fracture Characteristics of Aluminum Alloy Cylinders Under Internal Pressure," Engineering Fracture Mechanics, <u>4</u> (1) 51-63 (March 1972).
82880	2024 2219 6061	K_{Ic} K_{Ic} K_{Ic}	Nelson, F. G., et al., "The Effect of Specimen Size on the Results of Plane-Strain Fracture-Toughness Tests," Engineering Fracture Mechanics, <u>4</u> (1) 33-50 (March 1972).
83243	2024	K_{Ic}	Gunderson, A. W., "Tensile, Fracture and Fatigue Properties of 2024-T851 Aluminum Thick Plate," Report No. LA 72-24, Air Force Materials Laboratory, Wright-Patterson AFB, OH, (May 26, 1972).

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

84284	2024	da/dt	Hyatt, M. V., "Use of Precracked Specimens in Stress Corrosion Testing of High Strength Aluminum Alloys," Corrosion, <u>26</u> (11), 487-503 (November 1970).
84288	2014 2024 6061	K_{Ic} K_{Ic} K_{Ic}	Nelson, F. G., and Kaufman, J. G., "Plane Strain Fracture Toughness of Aluminum Alloys at Room and Subzero Temperatures". ASTM STP 496, American Society for Testing and Materials, Philadelphia, PA, (1971).
84306	2024 2124 2219	K_{Ic} K_{Ic} K_{Ic}	Harrigan, M. J., "B-1 Fracture Mechanics Data for Air Force Handbook Usage," Report TFD-72-501, North American Rockwell, Los Angeles Division, Los Angeles, CA (April 21, 1972).
84319	2219	K_{Ic}	Engstrom, W. L., "Determination of Design Allowable Properties, Fracture of 2219-T87 Aluminum Alloy," NASA CR-115388, The Boeing Company, Aerospace Group, Seattle, Wash., Contract NAS 9-10364 (March 1972).
84331	2020 2219	K_{Isc} K_{Isc}	Report of NRL Progress, Naval Research Laboratory, Washington, D. C., (January 1968).
84360	2024	K_{Ic} ; da/dN; K_{Isc}	McDonnell Aircraft Company, McDonnell Corp., St. Louis, Mo., Phase B Test Program, Report MDC A0913 (May 18, 1971).

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

84363	2021	K_{Ic}	Rich, D. L., "MCAIR IRAD Data for Fracture Mechanics Engineering and Design Data Handbook," with enclosures (1) Materials Definition, (2) Mechanical Properties Test Data, (3) Plane Strain Fracture Toughness Test Data, and (4) Plane Strain Constant Amplitude Crack Growth Test Data, McDonnell Aircraft Company, McDonnell Douglas Corporation, St. Louis, MO (June 1972).
84366	2024 (ALCLAD)	K_c	Broek, D., "Static Tests on Cracked Panels of 2024-T3 Alclad Sheet Materials From Different Manufacturers," NLR-TN M.2164, National Aerospace Laboratory, The Netherlands (November 1966).
84367	2024 2024 (ALCLAD)	K_c K_c	McEvily, A. J., Illg, W., and Hardrath, H. F., "Static Strength of Aluminum-Alloy Specimens Containing Fatigue Cracks," NACA TN 3816, Langley Aeronautical Laboratories (October 1956).
84368	2124	K_{Ic}	Babilon, C. F., et al., "Mechanical Properties, Fracture Toughness, Fatigue, Environmental Fatigue Crack Growth Rates, and Corrosion Characteristics of High-Toughness Aluminum Alloy Forgings, Sheet and Plate," Fifth Technical Management Report, Aluminum Company of America, Alcoa Research Laboratories, New Kensington, PA, Contract F33615-71-C-1571 (August 1972).
85631	2219	K_{Ic}	Thatcher, C. S., "Fracture of Aluminum Alloy 2219-T87," Report SD 72-SH-0129, Space Division, North American Rockwell, Los Angeles, CA, (November 1972).
85836	2024 2219	K_{Ic} K_{Ic}	"B-1 Fracture Toughness Data (K_{Ic}) - Rockwell International," Rockwell International Corporation, Los Angeles, CA (April 24, 1973).

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

85837	2024	a-vs-N; da/dN
	2219	a-vs-N; da/dN
	"Fracture Toughness Data Collection, Rockwell International Corporation, from B-1 Program," Rockwell International Corporation, Los Angeles, CA., April 1973.	
86210	2024	K_{Ic}
	"Rockwell International, B-1 Fracture Toughness Data on Titanium and Aluminum Alloys of June 4, 1973," Rockwell International, Los Angeles, CA, (June 4, 1973).	
86212	2024	a-vs-N; da/dN
	McCarty, J. E., et al., "Materials Fracture Data From the Advanced Metallic Structures: Cargo Fuselage Design for Improved Cost, Weight and Integrity," The Boeing Company, Seattle, Washington, Contract F33615-72-C-1893 (June 15, 1973).	
86213	2014	K_{Ic} ; K_{Ic} ; a-vs-N; da/dN
	2020	K_{Ic} ; K_{Ic} ; a-vs-N; da/dN
	2020 (ALCLAD)	K_{Ic}
	2021	K_{Ic}
	2024	K_{Ic} ; K_{Ic} ; a-vs-N; da/dN
	2024 (ALCLAD)	K_{Ic} ; a-vs-N; da/dN
	2124	K_{Ic} ; K_{Ic}
	2214	K_{Ic}
	2219	K_{Ic} ; K_{Ic} ; a-vs-N; da/dN
	2618	K_{Ic} ; K_{Ic}
	6061	K_{Ic} ; K_{Ic}
	Wygonik, R. H., "Compilation of Fracture Mechanics Data," Aluminum Company of America, Alcoa Research Laboratories, New Kensington, PA, Subcontract on F33615-73-C-5051 (June 12, 1973).	
86429	2024	K_{Ic}
	"Fracture Toughness Data," Progress Report on Materials Test Program, General Dynamics Corporation, Fort Worth Division, Fort Worth, Texas, Contract F33615-72-C-2149 (Received July 6, 1973).	

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

86575	2024	a-vs-N; da/dN	
		"Rockwell International, B-1 Program, da/dN Data, Center-Cracked Tension Specimens," Lockheed California Company, Burbank, CA, Report LR25152 (Received July 1973) (Memo from Ed Cawthorne dated July 10, 1973).	
86688	2014	K_{Isc}	
	2021	K_{Isc}	
	2024	K_{Isc}	
	2219	$K_{Ic}; K_{Isc}$	
	6061	$K_{Ic}; K_{Isc}$	
		Sprowls, D. O., et al., "Evaluation of Stress Corrosion Cracking Susceptibility Using Fracture Mechanics Techniques," Final Report Part I, Aluminum Co. of America, Alcoa Technical Center, Alcoa, Pa., Contract NAS8-21487, May 31, 1973.	
86734	2014	a-vs-N; da/dN	
	2024	K_c ; a-vs-N; da/dN	
	2024 (ALCLAD)	K_c	
	2618	a-vs-N; da/dN	
		Smith, S. H., "Fracture Mechanics Application to Materials Evaluation and Selection for Aircraft Structure and Fracture Analysis," Report No. D6-17756, The Boeing Company, Commercial Airplane Division, Renton, Washington (July 19, 1966).	
86842	2124	a-vs-N; da/dN	
		Babilon, C. E., et al., "Mechanical Properties, Fracture Toughness, Fatigue, Environment Fatigue Crack Growth Rates and Corrosion Characteristics of High-Toughness Aluminum Alloy Forgings, Sheet and Plate," Report AFML-TR-73-83, Alcoa Research Laboratories, New Kensington, PA, Contract F33615-71-C-15-71.	
87398	2024	a-vs-N; da/dN	
		Ellis, R., "Fracture Mechanics Studies of Fatigue Crack Propagation in 2024 Aluminum Alloy Panels Containing Transverse Slits," Report No. ARL/SM 379, Australian Defense Scientific Service, Aeronautical Research Laboratories, Melbourne, Australia, Department of Supply (August 1972).	

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

88468	2219	a-vs-N; da/dN	Bell, P. D., "Data Sheets for Constant Amplitude Crack Growth Data Generated by Grumman Aerospace Corporation for 2219-T851 Aluminum and Mill Annealed 6Al-4V Titanium Alloy Plate," letter to J. E. Campbell from Grumman Aerospace Corporation, Bethpage, NY, Contract F33615-72-C-1744 (March 15, 1974).
88578	2024	a-vs-N; da/dN	Demonet, R. J., "2024-T861 Aluminum Fracture Mechanics Test Data," Report LTR 9991-4076, Space Division, Rockwell International (January 1974).
88579	2024 2219	a-vs-N; da/dN a-vs-N; da/dN	"B-1 Program da/dN Data for Aluminum Alloys," Rockwell International Corporation, memorandum to H. D. Moran from E. W. Cawthorne, Battelle's Columbus Laboratories (April 3, 1974).
88700	6061	K_{Isc}	Gilbreath, W. P., and Adamson, M. J., "The Stress Corrosion Susceptibility of Several Alloys in Hydrazine Fuels," NASA Technical Note, Report NASA TN D-7604, Ames Research Center, Moffett Field, CA (February 1974).
88742	2124	K_{Ic}	Fudge, K. A., and Jones, R. E., "Engineering Design Data for Aluminum Alloy 2124-T851 Thick Plate," Report AFML-TR-73-310, University of Dayton Research Institute, Dayton, OH, Contract F33615-72-C-1282 (January 1974).
90011	2024 2219	K_{Ic} K_{Ic}	"Rockwell International, B-1 Program Fracture Toughness Data of August 5, 1974," with memorandum from E. W. Cawthorne to H. D. Moran of Battelle's Columbus Laboratories (August 5, 1974).

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

90981	2024	K_{Ic} ; a-vs-N; da/dN
	<p>Krupp, W. E., Wimmer, F. T., Pettit, D. E., and Hoepfner, D. W., Data Sheets for Final Report on "Investigation of the Effects of Stress and Chemical Environments on the Prediction of Fracture in Aircraft Structural Materials," Rye Canyon Research Laboratory, Lockheed-California Company, Burbank, CA, Contract F33615-71-C-1688, data sheets received October 21, 1974.</p>	
AL001	2048	K_{Ic} ; da/dN
	2219	K_{Ic} ; da/dN
	<p>Brownhill, D. G., et al., "Exploratory Development for Design Data on Structural Aluminum Alloys in Representative Environments," Alcoa Laboratories, Alcoa Center, PA, Contract No. F33615-74-C-5089, Report No. AFML-TR-77-102, July 1977.</p>	
AL002	2020	a-vs-N; da/dN
	2024	a-vs-N; da/dN
	<p>Data Sheets Containing Fatigue-Crack Growth Rate Data Near the Threshold on Aluminum Alloys 2020, 2024, and 7475, sent from R. J. Bucci, Aluminum Company of America, ATC, February 1982.</p>	
AL010	2024	a-vs-N; da/dN
	<p>FCGR Data Sheets on Aluminum Alloy 2024-T351 Plate, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.</p>	
AL011	2324	a-vs-N; da/dN
	<p>FCGR Data Sheets on Aluminum Alloy 2324-T39 Plate, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.</p>	
BL002	2124	a-vs-N; da/dN
	<p>Ruff, P. E., and Smith, S. H., "Development of Mil-Hdbk-5 Design Allowable Properties and Fatigue Crack-Propagation Data for Several Aerospace Materials," Battelle's Columbus Laboratories, Columbus, OH, Contract No. F33615-75-C-5063, Report No. AFML-TR-77-162, October 1977.</p>	

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

BW001	2014	da/dN
	2024	da/dN
	Horsley, J. J., and Harris, C. E., "Durability and Damage Tolerance Assessment (DADTA) of B-52 G/H Structure, Task II, Damage Tolerance Assessment Final Report," Boeing Company, Wichita, KS, Contract No. F34601-79-C-1515, Document No. D3-11560-3, June 1980.	
BW002	2024	da/dN
	Lambert, G., Mecham, P., and Mah, T., "Durability and Damage Tolerance Assessment (DADTA) of B-52 G/H Structure, Task III, Individual Airplane Crack Growth Tracking Program," Boeing Company, Wichita, KS, Contract No. F34601-79-C-2258, Document No. D3-11560-6, November 1981.	
BW005	2024	da/dN
	Watson, K. R., "Weapons Bay Durability and Damage Tolerance Analysis," The Boeing Co., Wichita, KA, Contract No. F33657-78-C-0108-PZ0036, Document No. D361-40041-1, September 1980.	
BW007	2024	K_{Ic}
	Hananel, A., Watson, K., Knoff, K., and Sherrick, G., "Fracture Mechanics Testing of B-52/CMI Materials," Final Test Report, The Boeing Co., Wichita, KA, Contract No. F33657-78-C00108-PZ0036, Document No. D361-11197-1, December 1978.	
DA001	2024	a-vs-N; da/dN
	Fatigue Crack Growth Rate Data Sheets on Aluminum Alloys 2024, 7010, 7050, 7075 and 7475, Stainless Steel Alloys 17-4PH and 17-7PH, and Alloy Steels 4340, A286, H-11, HY-180 and 12-9-2, Sent from Mr. Paul Abelkis, Douglas Aircraft Company, McDonnell Douglas Corporation, Long Beach, CA, March 1982.	
DA004	2024	K_{Ic} ; a-vs-N; da/dN
	Larson, B. F., "C-17 Material Specimen Tests for Fracture Mechanics Data Phase I, Lot 1 Aluminum Alloys Final Technical Report," Contract F33657-81-C-2108, Report MDC J9483-1, June 1987.	

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

DA005	2024	K_{Ic} ; a-vs-N; da/dN	Kahandal, R. S., "C-17 Material Specimen Tests for Fracture Mechanics Data Phase I, Lot 2 Aluminum Alloys Final Technical Report," Douglas Aircraft Company, McDonnell Douglas Corporation, Contract F33657-81-C-2108, Report MDC J9483-2, April 22, 1988.
EFM01	2024	a-vs-N; da/dN	Mackay, T. L., "Fatigue Crack Propagation and Rate at Low Delta K of Two Aluminum Sheet Alloys - 2024-T3 and 7075-T6," Engineering Fracture Mechanics, Volume II, pp 753-761, 1979.
FR001	2024	a-vs-N; da/dN	Fatigue Crack Growth Rate Data on 2024 Aluminum Sheet and Plate, sent from J. Arrighi, Fairchild Republic Company, Farmingdale, NY, March 4, 1982.
GD003	2124	K_{Ic} ; a-vs-N; da/dN	Kaarlela, W. T., "2124-T851 Metals Allowables Testing," General Dynamics, Fort Worth Division, Report 16 PR850, October 1978.
GD004	2024	a-vs-N; da/dN	Wolanski, Z. R., "2024-T81 and -T62 0.125-Inch Sheet Metal Allowables," General Dynamics, Fort Worth Division, Report No. 16 PR853, October 1978.
GD005	2024	K_c	Margolis, W. S., and Nordquist, F. C., "Plane Stress Fracture Toughness (K_c) of Aluminum Alloy 7475- One Half Inch Plate Tempers -T7651 and -T7351 and of Aluminum 2024 - One Eighth Inch Sheet -T81 and T62 Temper," General Dynamics, Fort Worth Division, TX, Report No. 16 PR889, February 1978.
GD011	2124	K_{Ic} ; K_c	Margolis, W. S., "Plane Stress (K_c) Fracture Toughness of Thin Elements from Thick Plate of 2124-T851 and 7475-T7351 Aluminum Alloys," General Dynamics, Fort Worth Division, Report No. 16 PR1287, October 1979.

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

MA002	2124	K_{Ic} ; a-vs-N; da/dN	Fracture Toughness of Ti-6Al-4V Plate and Forging, Aluminum 2124-T851 Plate and 7175-T37652 Forging and Fatigue Crack Growth Rate for Ti-6Al-4V Plate and Forging, Ti-6Al-6V-2Sn Extrusion, Aluminum 2124-T851 Plate and Aluminum 7175-T73652 Forging, Data Submitted by D. L. Rich of McDonnell Aircraft Co., St. Louis, MO, Attachment #2, Received March 12, 1982.
MA006	2024	da/dN	Garland, K., and Krieg, J. F., "Evaluation of the Effect of Material Cyclic Softening and Hardening on Crack Initiation Life and Crack Growth, with and without Overloads as a Function of Stress Ratio," McDonnell Aircraft Company, St. Louis, MO, April 1978.
MD001	2219	K_{Ic}	Davis, R. J., and Rowe, R. A., "Mechanical Properties of SRB Rolled-Ring Forgings and Large Hand Forgings," McDonnell Douglas Astronautics Company, Huntington Beach, CA, Report MDC G8545, June 1980.
MPC01	2024 2124 2219 2419	K_{Ic} K_{Ic} K_{Ic} K_{Ic}	Collis, S. F., et al., "Fracture Toughness Data Bank for Aluminum Alloy Mill Products," Aluminum Company of America, Alcoa Laboratories, Alcoa Center, PA, Data Submitted by Alcoa, Reynolds Metals, Kaiser Aluminum, and Martin Marietta Aluminum and Prepared for Metal Properties council, Inc., August 1979.
NC003	2024 2124	K_{Ic} ; da/dN K_{Ic} ; da/dN	Chanini, G. R., et al., "Methodology for Evaluation of Fatigue Crack-Growth Resistance of Aluminum Alloys Under Spectrum Loading," Northrop Corporation, Aircraft Division, Hawthorne, CA, Contract No. N00019-80-C-0427, April 1982.
RA001	2124	K_{Ic}	Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 36-KFP-3M04, September 1978 - June 1980.

TABLE 7.20 (CONTINUED)

REFERENCES FOR THE 2000 SERIES ALUMINUM ALLOY DATA

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TABLE 7.20 (CONTINUED)

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TABLE 7.20 (CONCLUDED)

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